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Society of Bengal





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JOURNAL  
OF THE  
ASIATIC SOCIETY OF BENGAL,

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THE SECRETARIES.

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VOL. XVIII.

PART I.—JANUARY TO JUNE, 1849.

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“ It will flourish, if naturalists, chemists, antiquaries, philologers, and men of science, in different parts of Asia will commit their observations to writing, and send them to the Asiatic Society at Calcutta. It will languish if such communications shall be long intermitted; and it will die away if they shall entirely cease.”—SIR WM. JONES.

~~~~~

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1849.



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## ANNUAL REPORT.

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THE Council of the Asiatic Society submit with much satisfaction their Annual Report, shewing the state of the Society's affairs during the year just expired.

During that period the Society have had to deplore the death of seven members, of whom two, the Hon'ble Sir J. P. Grant and Sir Henry Wilmot Seton, long held the office of Vice Presidents of the Society, and were distinguished for the deep interest they ever evinced in its prosperity and usefulness. In the same list too the Council have to record the names of Major General Hodgson, Colonel Stacy and Colonel Wilcox, as authors of valuable contributions to the Society's publications.

By departure to Europe—the loss of members has been 10, of whom Colonel Forbes, a Vice President, is expected to return immediately, three others in a year or two, and six may be considered as permanently separated from our ranks.

By actual *withdrawal* the diminution has been 19, of whom 14 have attributed their secession to the pecuniary difficulties which have been felt so severely during the past year by all classes of the community.

While we have thus permanently lost 32 members, 26 new members have been elected, and 5 have returned from Europe, leaving our numbers practically the same as at the close of 1847, being subscribing members, actually in India, 159.

### FINANCES.

The Council submit with pleasure an abstract statement of the receipts and disbursements for the year 1848.

This exhibits Receipts from all sources, .....	Rs.	28,100	1	7
Expenditure, .....		27,027	2	11
Balance to acct. in Cash and in the Bank of Bengal, .....		1,072	14	8
<i>Of which received from Government (Annual.)</i>				
For Oriental Grant, .....	Rs.	6,600	0	0
For Museum Economic Geology, .....		3,000	0	0
For ditto ditto, .....		768	0	0
For Museum Zoology, .....		3,000	0	0
For ditto ditto, .....		600	0	0
	Rs.	13,368	0	0
<i>From Society's resources.</i>				
From Journal, .....	Rs.	1,964	12	0
Subscriptions and Admission fees, .....		9,994	15	2
Sale of Oriental Works, .....		928	0	0
Contributions from Members for the purchase of Furniture, .....		800	0	0
Miscellaneous, as per detailed Account, .....		132	6	6
	Total Rs.	13,820	1	8
Balance of last year, .....		911	15	11
		14,732	1	7
	Total Rs.	28,100	1	7

The whole of the outstanding *liabilities*, including the estimated cost of the Journal to the 31st December, and Rs. 1,348 10 3 due to Mr. Vos for the repairs and additions to the house, amount to Rs. 7,549 1 9, while our *dependancies* to credit amount to Rs. 10,398 2 4, of which at least Rs. 9,000 are certainly realizable within the ensuing year.

The Council regard this result as eminently satisfactory, especially with reference to the heavy expense (Rs. 2,348 10 3) incurred by the triennial repairs and the additions made to the buildings, and to the number of drawings with which the Journal has been embellished, and the scientific and literary contributions of our members illustrated; also with reference to the expense incurred in printing and editing 12 numbers of the Society's new Oriental periodical, the *Bibliotheca Indica*, of which 9 have already appeared. Nor should it be forgotten that this result has been arrived at in a year of unparalleled distress, which bore directly or indirectly most seriously upon the Society's resources.

#### ADDITIONS TO BUILDINGS.

The Council point with much pleasure to the great improvement effected in the premises by the enclosure of the south veranda, the erection of a sky-light over the hall of meeting, the furnishing of the apartments and the arrangements for the suitable lighting of the rooms

on the occasions of the evening meetings. The cost of the furniture it is gratifying to add, has been chiefly provided by the liberal donations of a few members of the Society, and has entailed only a charge of Rs. 336 on their general funds.

The financial crisis of 1848 rendered it impracticable to proceed with the plans for erecting a Sculpture Gallery and Lecture-Room, and for providing lectureships, as suggested in the Annual Report for 1847. Nor does the present period appear favorable for the introduction of these important measures, which the Council still hope are only postponed to more prosperous times.

#### ORIENTAL DEPARTMENT.

The marked feature in this department is the commencement of the "*Bibliotheca Indica*" on the plan suggested by the Vice President, Mr. Laidlay, and which has already elicited the approbation of Professor Wilson, M. Burnouf, and the leading philologists of Germany. Next in importance is the liberal remission on the part of the Hon'ble the Court of Directors of the heavy claims to which the Society had become liable for the misapplication of the Oriental Grant from 1841 to 1847.

#### NATURAL HISTORY. THE SECTIONS, &c.

In the Department of *Natural History*, the Council have to record their grateful sense of the indefatigable exertions of the *Section of Natural History*, who have met weekly in the Museum during the whole year, and under whose directions in a few months more the Council feel assured that the Zoological Museum will be arranged and displayed in a manner worthy of the scientific reputation of the Society, and of the munificent aid afforded by Government to this department of their labours. The Council record with much regret that notwithstanding the zealous exertions of the Section no Catalogue has been as yet provided of the Collections in this department.

On the subject of the Sections generally the Council are of opinion that their appointment has been attended with great advantage to the Society; they propose that the present members be re-elected for the ensuing year.

The *Library* has been enriched by the acquisition of 474 volumes, the Museum by numerous and very valuable additions since the last Annual Report.

The Council have lastly to point out that in consequence of the death of Sir J. P. Grant, and the departure from the Presidency of Mr. H. M. Elliot, there are two vacancies to be filled up in the Vice Presidents list. As Colonel Forbes, so many years a Vice President, is immediately expected to return to Calcutta, the Council propose his re-election. On the Council list—through the departure of Mr. Bushby, Mr. W. P. Grant, Lord Arthur Hay, and Mr. Heatley, and the resignation of Mr. Grey, five vacancies exist, but the Council consider that the original number of nine members should be reverted to, which if agreed to, will render necessary the election of two new members. The Council accordingly propose the following names for the consideration of the Society:—

*Dr. McClelland,*  
*Babu Ramgopal Ghose.*

The whole of the accounts and documents illustrative of the Society's affairs as reported on in the preceding details, are herewith submitted to the Society, and the Council propose that they be printed separately for circulation to the members.

With reference to the revision of rules adverted to in the last general report, the Council desire to add that replies have not as yet been received from the principal public bodies addressed on this subject.

The Council in conclusion desire to record their grateful sense of the important literary and scientific contributions received by the Society during the past year, from many of its members, among whom the following—

*Mr. B. H. Hodgson,*  
*Lieut. H. Strachey,* and  
*Capt. A. Cunningham,*

have been conspicuous for the number and value of their communications. The Society are also deeply indebted to the Hon'ble Mr. Thomason, Lieut.-Governor N. W. Provinces, and to Mr. H. M. Elliot, Secretary to the Government of India, for the numerous and important public documents placed at their disposal for publication in the Journal.

By resolution of the Council,

W. B. O'SHAUGHNESSY, *Secretary.*

*Asiatic Society, 10th January, 1849.*



The Report having been read and adopted, the meeting proceeded to elect officers for the ensuing year, and on scrutiny of the lists, the elections of the following gentlemen were announced :—

*President.*

THE HON'BLE SIR J. W. COLVILLE.

*Vice Presidents.*

THE LORD BISHOP OF CALCUTTA.

LIEUT.-COL. W. N. FORBES.

J. W. LAIDLAY, ESQ.

DR. W. B. O'SHAUGHNESSY.

*Council.*

WELBY JACKSON, ESQ.

CAPT. A. BROOME.

R. W. G. FRITH, ESQ.

BABU RAMGOPAL GHOSE.

DR. H. WALKER.

W. SETON KARR, ESQ.

JAMES DODD, ESQ.

DR. McCLELLAND,

and

REV. MR. LONG.

*Secretaries.*

W. B. O'SHAUGHNESSY, ESQ.

J. W. LAIDLAY, ESQ.

DR. E. ROER, *Secretary in the Oriental Department.*

The following gentlemen were also appointed members of the several Sections :—

*Oriental Section.*

W. SETON KARR, ESQ.

W. JACKSON, ESQ.

BABU HURREEMOHUN SEN.

BABU RAJENDRA LAL MITTRA.

REV. MR. LONG.

CAPT. LATTER.

DR. ROER, *Secretary.*

*Natural History.*

J. W. GRANT, ESQ.

DR. WALKER.

R. W. G. FRITH, ESQ.

DR McCLELLAND

MR. LAIDLAY, *Secretary.*

*Statistical.*

REV. MR. LONG.

DR. DUNCAN STEWART.

LIEUT. STAPLES.

*Geology and Mineralogy.*

CAPT. BROOME.

JAS. DODD, ESQ

G. WILBY, ESQ.

H. NEWMARCH, ESQ.

A. MITCHELL, ESQ.

*Physics and Meteorology.*

J. W. GRANT, ESQ.

CAPT. THUILLIER.

LIEUT.-COL. FORBES.

REV. MR. PRATT.

Dr. *Abstract Statement of the Receipts and*RECEIPTS.

## TO MUSEUM.

Received from the General Treasury the amount of allowance authorised by the Court of Directors for the services of a Curator for 12 months at 250 Rs. per month, .....	Rs.	3,000	0	0
Ditto ditto for preparation of Specimens at 50 Rs. per month, .....		600	0	0
Ditto back amount of Beni Frash's services for 5 months, his services not being required—at 5 Rs. per month, .....		25	0	0
Ditto fine from Frash's Salary, .....		0	8	0
		<u>3,625</u>	<u>8</u>	<u>0</u>

## TO MUSEUM ECONOMIC GEOLOGY.

Received from the General Treasury the amount of allowance granted by Government for the services of a Joint Curator, for 12 months, at 250 Rs. per month, .....		3,000	0	0
Ditto ditto for Establishment and contingencies, and ditto, at 64 Rs. per month, .....		768	0	0
		<u>3,768</u>	<u>0</u>	<u>0</u>

Carried over,.. 7,393 8 0

## Disbursements of the Asiatic Society, for the year 1848.

Cr.

## DISBURSEMENTS.

## BY MUSEUM.

Paid Mr. E. Blyth's Salary as Curator for 12 months, at 250 Rs. per month, .....	3,000	0	0	
Ditto house-rent for ditto at 40 Rs. per ditto, .....	480	0	0	
				<u>3,480 0 0</u>
Ditto Establishment of Taxidermists, Artists, Carpen- ters, &c., ditto ditto at 147 Rs. per month, .....	1,764	0	0	
Ditto Contingencies, ditto ditto, .....	526	2	0	
Ditto for 5 dozens and 2 Stoppered Bottles, .....	18	1	0	
Ditto for 1 tin-lined Case for packing Minerals for Syd- ney Museum, .....	3	1	6	
Ditto Mr. H. Mansel, for a Teak Wood Glass Case for the Model of the Taj, .....	40	0	0	
Ditto ditto for expences incurred in re- placing the Missing pieces of Ivory, &c. for the above, .....	16	0	0	
				<u>56 0 0</u>
Ditto for repairing and enlarging a Teak Wood Table for ditto, .....	12	0	0	
Ditto for a Glass Case for depositing Shells, .....	70	7	6	
				<u>5,929 12 0</u>

## BY MUSEUM ECONOMIC GEOLOGY.

Paid Mr. H. Piddington's Salary as Joint-Curator for 12 months, at 250 Rs. per month, .....	3,000	0	0	
Ditto Establishment for ditto at 31 Rs. per ditto, ...	372	0	0	
Ditto Contingencies for ditto, .....	89	13	6	
Ditto for a Copy of Lyall's Principles of Geology, ...	11	4	0	
Ditto for a Silver Evaporating Basin, .....	28	8	0	
Ditto Messrs. Scott and Co. for a Copy of Bengal Di- rectory for 1848, .....	8	0	0	
Ditto for a Copy of Quarterly Journal of Geological Society, No. 12, .....	4	0	0	
Ditto for 4 lbs. and 5oz. of liquor ammonia with stop- pered bottles, .....	18	0	0	
				<u>3,531 9 6</u>

## BY MINERALOGICAL AND GEOLOGICAL MUSEUM.

Paid Contingencies for 12 months, .....	65	10	0	
Ditto Mr. J. C. Sherriff, for printing Geological Cata- logue in February 1841, .....	89	13	6	
Ditto ditto Mineralogical ditto, .....	61	10	6	
Ditto for a Saw for cutting Specimens, .....	7	8	0	
Ditto for Teak planks for making a chest of drawers,..	13	4	6	
				<u>237 14 6</u>
Carried over,..	9,699	4	0	

	Brought forward, Co.'s Rs.	7,393	8	0	
BY LIBRARY.					
Received by Sale of Books, .....		65	6	6	
		<hr/>			
			65	6	6

## TO ORIENTAL PUBLICATIONS.

Received from the General Treasury the amount of grant from Government for 12 months, at 500 Rs. per month, .....		6,000	0	0	
Ditto by sale of Oriental Publications, ..	770	0	0		
Ditto (by transfer) from Mr. H. Torrens, ditto, .....	134	0	0		
Ditto ditto Mr. J. Muir, ditto, .....	24	0	0		
		<hr/>			
		928	0	0	
		<hr/>			
			6,928	0	0
		<hr/>			
Carried over,..		14,386	14	6	

Brought forward, Co.'s Rs. 9,699 4 0

BY LIBRARY.

Paid Baboo Rajenda Lall Mitter's Salary as Assistant Secretary and Librarian for 12 months, at 100 Rs. per month, .....	1,200	0	0
Ditto Establishment for Library, at 58 Rs. 8 An. ditto, .....	702	0	0
Ditto Contingencies for ditto, .....	173	6	6
Ditto Messrs. Thacker and Co., for purchase of Books, .....	175	12	0
Ditto Messrs. Ostell and Lepage, for ditto, .....	196	12	0
Ditto Capt. C. Douglas, ditto, .....	144	8	0
Ditto Mr. J. S. Cunningham, agent of Messrs. Smith, Elder and Co., for ditto, .....	208	0	0
Ditto Mr. J. Sinclair, Accountant Oriental Bank, for a set of Bills of exchange, No. 5 1215, on the Union Bank of London, in favor of Mr. H. C. Cumming, and remitted in payment of Books purchased from him—£25 10 0, exchange 1 8½ per Rupee, ....	298	8	7
Ditto Native Book-Sellers for ditto, ....	16	8	0
Ditto Messrs. Scott and Co., for a Copy of Bengal Directory for the year 1848, .....	10	0	0
Ditto for a Copy of Capt. Bedford's Chart of the Hooghly, below Calcutta, .....	2	0	0
Ditto Mr. Edmond, for a Copy of the Distribution List of the B. C. Service, from 1st November, 1848, .....	1	0	0
	<hr/>		
	1,053	0	7
Ditto Duftry for binding books, .....	251	6	0
Ditto Messrs. Thacker and Co., for stationary, .....	36	12	0
Ditto Landing charges on Books, parcels, &c., .....	5	12	0
Ditto for making 14 new planks for, and repairing bookshelves, .....	27	0	0
Ditto for a Ratan Mat, .....	26	10	0
Ditto freight for a Case containing Asiatic Researches, forwarded to Dr. L. C. Stewart, Kussowlee, .....	2	13	0
Ditto ditto Mahabharut ditto to Pundit Jawhirilal, Umbala, .....	1	8	0
Ditto ditto for 2 packages ditto to Capt. Mr. Kittoe, Benares, .....	6	9	9
	<hr/>		
	10	14	9
	<hr/>		
		3,486	13 10

BY ORIENTAL PUBLICATIONS.

Paid Establishment for Oriental Works for 12 months, at 72 Rs. per month, .....	864	0	0
Ditto Contingencies for ditto, ....	16	12	9
Ditto Rev. J. Thomas, Printer, for 100 Copies of Mr. Hodgson's Essay on the Kooch, Bodo and Dhimal Tribes, .....	300	0	0
Ditto Messrs. Thacker and Co., for a Copy of the Abesh Kedah, .....	3	4	0
Ditto Duftry for binding books, .....	50	6	0

Carried over, .. 13,186 1 10

*Report.*

Brought forward, Co.'s Rs. 14,386 14 6

## TO JOURNAL.

Received by sale of the Asiatic Society's Journal, . . . . .	291 12 0	
Received by transfer from the separate account of		
Journals sold to Subscribers, . . . . .	1,673 0 0	
	<hr/>	1,964 12 0

Carried over, ..	<hr/>	<hr/>
	16,351 10 6	

	Brought forward, Co.'s Rs.	13,186	1	10
Ditto for transcribing 8400 Slokes of the Rajah Tarangini, at 3 8 per 1000, . . . . .	29	6	6	
Ditto ditto 24 jooz and 6 pages of the Dartorruck Amar Bahdarashale, at 3 jooz per Rupee, . . . . .	8	2	0	
		<u>37</u>	8	6
Ditto for eight wrought-iron bars for suspending book-shelves, . . . . .		23	9	3
Ditto for a Ratan Mat, . . . . .		20	2	0
Ditto for repairing book-shelves and supplying 112 feet of Teak wood for the same, . . . . .		28	7	6
Ditto Rev. J. Thomas, of Baptist Mission Press, for printing Bibliotheca Indica, No. 1-4, . . . . .		896	2	0
Ditto ditto Dr. E. Roer's Salary as Editor of the Oriental Journal for 11 months, at 100 Rs. per month, . . . . .	1,100	0	0	
Ditto ditto his Establishment for ditto, . . . . .	474	0	0	
Ditto ditto boat hire for Pundits for ditto, . . . . .	48	0	0	
Ditto ditto Contingencies for ditto, . . . . .	14	6	6	
Ditto Proprietors of Newspapers for advertizing Bibliotheca Indica, . . . . .		37	8	0
Ditto for a Bill Register-Book for ditto, . . . . .		1	9	0
Ditto Accountant to the Government of Bengal, Revenue Department, for a draft on the Collector of Benares in favour of Mr. G. Nicholls, Head Master Benares College, and remitted to him on account Oriental publications, . . . . .	51	0	0	
Less amount received from Dr. Roer, on this account from Mr. Beadon, . . . . .	11	8	0	
		<u>39</u>	8	0
			3,955	3 6

BY JOURNAL.

Paid Rev. J. Thomas, account Baptist Mission Press, for printing the Society's Journal, from July to April, 1848, . . . . .	2,852	0	0	
Ditto ditto for 2 Reams and 9 quires of thick tinted colored paper, . . . . .	49	0	0	
Ditto Mr. T. Black, Proprietor of the Asiatic Lithographic Press, for printing and lithographing Drawings, Charts, &c., . . . . .	707	9	10	
Ditto Mr. J. DeCruz, for the Proprietor of the Calcutta Lithographic Press, for Lithographing Maps, . . . . .	60	6	0	
Ditto Mr. T. F. Cummins, for Lithographing plates, . . . . .	20	12	0	
Ditto Mahindy Lall Sircar, for Lithographing plates, . . . . .	47	8	0	
		<u>836</u>	3	10
Ditto Bissonauth Nundon's Salary as Draftsman for August and September, 1848, . . . . .	50	0	0	
Ditto for binding Journals, . . . . .	10	8	0	
Ditto freight for Journals, forwarded to Messrs. W. H. Allen and Co. London, per P. and O. S. N. Co.'s Steamers, . . . . .	123	8	0	
Ditto Contingencies and postage, . . . . .	60	4	6	
		<u>3,981</u>	8	4
			21,122	13 8

Carried over, . . . . .

Brought forward, Co.'s Rs. 16,351 10 6

## TO CONTRIBUTIONS AND ADMISSION FEES.

Received from Members, amount of quarterly contributions during the 12 months, .....	9,386 15 2	
Ditto ditto admission fees ditto, .....	608 0 0	
	<hr/>	9,994 15 2

## TO MISCELLANEOUS.

Received by sale of Old Mats, .....	8 8 0	
Received by transfer from Mr. J. Muir, the amount paid for printing 200 Copies of the Literature of the Vedas as per contra, .....	32 0 0	
	<hr/>	40 8 0

## TO SECRETARY'S OFFICE.

Received from Buckawoolla Peon, 1st instalment in payment of Rs. 10 advanced him on account of his Salary, .....	1 0 0	
	<hr/>	1 0 0

## TO CONTRIBUTIONS FOR THE PURCHASE OF FURNITURE.

Received from the following Members contributions for the purchase of the Asiatic Society's Furniture :—		
J. W. Colville, Esq. ....	Rs. 100 0 0	
J. W. Grant, Esq. ....	100 0 0	
Messrs. Willis and Earle, .....	50 0 0	
J. W. Laidlay, Esq. ....	50 0 0	
G. Lamb, Esq. ....	50 0 0	
H. M. Elliot, Esq. ....	50 0 0	
Rajah Ramchund Sing, .....	200 0 0	
Rajah Sutchurn Ghosaul, .....	50 0 0	
W. B. Jackson, Esq. ....	50 0 0	
Baboo Ramgopaul Ghose, .....	50 0 0	
E. Currie, Esq. ....	50 0 0	
	<hr/>	800 0 0

Carried over, ... 

---

 27,188 1 8



Brought forward, Co.'s Rs. 21,122 13 8

BY MISCELLANEOUS.

Paid Mr. H. Halligan's Salary as Night Guard for 12 months, at 40 Rs. per month, .....	480	0	0	
Ditto for repairing the Table for the Meeting Room...	10	3	0	
Ditto for repairing and bronzing 14 wall shade branches, and supplying 14 new Toon Wood Brackets, .....	14	0	0	
Ditto for advertizing Meetings of the Asiatic Society in the Newspapers, .....	114	4	9	
Ditto Messrs. Spence and Co., for lighting up the Town Hall for the Meeting of May, June, July, and August 1848, at 32 Rs. each, .....	128	0	0	
Ditto for Sundry Contingent expences incurred for the Meetings, and for Oil for Night Guard, .....	100	1	9	
Ditto Nyak bearer's Salary, as bearer for the reading room from 12th September to 30th October, 1848, at 6 Rs. per month, . . . . .	9	12	9	
Ditto Mr. J. Chaunce, for winding up and keeping the Clock in order, .....	25	0	0	
Ditto Rev. J. Thomas, account Baptist Mission Press, for printing Miscellaneous Articles,.....	207	4	0	
Ditto ditto on account Mr. J. Muir, for printing 200 Copies of the Literature of the Vedas,.....	32	0	0	
Ditto Mr. T. Black, Proprietor of the Asiatic Lithographic Press, for Lithographing 100 Copies of election letter, .....	6	8	0	
Ditto ditto, for printing from a steel Engraving emblematic Vignette of the Museum of the Society, .....	6	0	0	12 8 0
Ditto (by transfer) on account of Mr. H. Torrens, in part of Rupees 1500 due to him by the Society,....	502	0	0	
Ditto ditto Mr. J. Muir, Ditto Rs. 500 ditto, .....	163	0	0	
	<hr/>			1,803 2 3

BY SECRETARY'S OFFICE.

Paid Mr. F. Greenway's Salary as officiating Accountant for 12 months at 60 Rs. per month,.....	720	0	0	
Ditto Establishment for Ditto at 41 Rs. per ditto, ..				Co. Rs. 492 0 0
Less Salary of Peons, whose services were not entertained,.....	3	0	3	488 15 9
Ditto for Stationary, .....	86	6	0	
Ditto Contingencies and Postage, .....	61	12	6	
Ditto Bucka woolla Peon, advance on account of his salary,.....	10	0	0	
	<hr/>			1,367 2 3

BY PURCHASE OF FURNITURE.

Paid Messrs. Adam and Co. for purchase of the following articles :—

1 Mahogany Marble-top Circular Drawing Room Table, .....	220	0	0
2 pairs or 4-Light Lustres at 120, ..	480	0	0
1 pair of treble-branch wall Gerandols,	70	0	0
1 Mirzapoor Carpet, 23 feet by 16 feet,	125	0	0
1 Bronze Standish, .....	28	0	0

Carried over,.. 24,293 2 2

Brought forward, Co.'s Rs. 27,188 1 8

## TO BALANCE.

As per Account closed on the 31st Dec. 1848, ..... 911 15 11

Company's Rupees,.... 28,100 1 7

Errors and

*Calcutta, Asiatic Society, }  
the 30th Dec. 1848. }*

			Brought forward, Co.'s Rs. 24,293	2	2
1 Mahogany Camp Sideboard in 3 parts, .....	110	0	0		
2 Pairs of Bronzed Table Argand Lamps, .....	100	0	0		
1 Gross Cotton Wicks,.....	3	0	0		
			<u>1,136</u>	0	0
Ditto Muddoo Soodun Doss, for 3 Argand Lamps, .....	25	0	0		
2 Dozens Oilburners,.....	10	0	0		
2 Glass Tumblers,.....	1	0	0		
				36	0
				16	8
Ditto for 11 pieces of Beerhoom cloth,.....				442	1
Ditto for Rattan Mats, .....				<u>1,630</u>	9
					0

BY BUILDINGS.

Paid Mr. J. M. Vos, advance on account of repairs and alterations of the Society's Premises,.....	1,000	0	0		
			<u>1,000</u>	0	0

BY SIR WM. JONES' MONUMENT.

Paid Messrs. Sheriff and Co. for repairing Sir Wm. Jones' Monument, as per estimate, .....	103	7	9		
			<u>103</u>	7	9

BY BALANCE.

In the Bank of Bengal, .....	955	7	6		
Cash in hand, .....	37	7	2		
			<u>992</u>	14	8

BY INEFFICIENT BALANCE.

For amount advanced Mr. Templeton, for Contingencies in the Museum and Zoology Department on the 27th ultimo, .....	50	0	0		
Ditto Baboo Rajendralall Mittro, Assistant Secretary and Librarian, ditto in the Library, on the 3rd ultimo, .....	30	0	0		
			<u>80</u>	0	0
				<u>1,072</u>	14
					8

Company's Rupee,.. 28,100 1 7

Omissions Excepted.

FRED GREENWAY,  
*Officiating Accountant.*

Dr.

*The Oriental Publication Grant in*

January 11th, 1848.—To Cash paid Dr. E. Roer, Co-Secretary, Oriental Department, Establishment and Contingencies for the month of Dec. 1847, for the publication of the Vedas, .....	Rs.	44	0	0	
Ditto 15th, ditto, Establishment for Oriental Works,		72	0	0	
Ditto 20th, ditto. Duftry for binding Oriental Books, presented to Pope Pius IX.,.....		24	12	0	
Ditto ditto ditto ditto, .....		12	12	0	
					153 8 0
February 8th ditto, Dr. E. Roer, Editor of the Oriental Journal "Bibliotheca Indica," his allowance for the month of Jan. 1848, .....		100	0	0	
Ditto ditto Establishment and Contingencies for ditto,		29	2	0	
Ditto 17th ditto, Establishment for Oriental Works for Jan. 1848, .....		72	0	0	
					201 2 0
March 6th ditto, Duftry for binding the following works :—					
A Copy of Amarcosha, .....		1	6	0	
A Copy of Persian Catalogue, .....		0	12	0	
					2 2 0
Ditto 7th ditto, Dr. E. Roer, Co-Secretary Asiatic Society, his allowance as Editor of the "Bibliotheca Indica" for Feb.,		100	0	0	
Ditto Establishment and Contingencies,		24	0	0	
Ditto Charges for Advertizing the 1st No. of the Bibliotheca Indica in the Bengalee Newspapers, .....		11	8	0	
Ditto ditto ditto in the "Englishman,"		8	8	0	
Ditto ditto ditto in the Bengal Hurkaru,		6	0	0	
					150 0 0
Ditto 16th ditto, Establishment for Oriental Works for February 1848, ....		72	0	0	
					72 0 0
Ditto 17th ditto, Sundry petty Charges,		10	0	0	
					10 0 0
Ditto 29th ditto, Messrs. W. Thacker and Co. for a Copy of the Abesh Kedah, .....		3	4	0	
					223 0 0
April 5th ditto, Dr. E. Roer, Editor of the Oriental Journal for March 1848,		100	0	0	
Ditto ditto his Establishment and Contingencies for March,.....		46	0	0	
					146 0 0
Ditto 6th ditto, petty Charges, .....		0	4	0	
Ditto 15th ditto, Establishment for Oriental Works for March 1848, .....		72	0	0	
Ditto 29th ditto, for a Blank Book, .....		1	9	0	
					219 13 0
					Carried over,.. 802 7 0

*Account Current with the Asiatic Society*

Cr.

Jan. 1st, 1848.—By Balance of Account closed and published down to the 31st Dec. Company's 5 per cent. Loans of 1841—'42, .....	4,000	0	0		
Cash, .....	202	0	0		
				<u>4,202</u>	<u>0 0</u>
					4,202 0 0
Ditto 15th ditto Cash, received from the General Treasury, the Amount of Monthly grant sanctioned by the Court of Directors for the Month of December 1847, .....		500	0	0	
				<u>500</u>	<u>0 0</u>
					500 0 0
February 15th ditto, ditto for January 1848, .....		500	0	0	
				<u>500</u>	<u>0 0</u>
					500 0 0
March 16th ditto, ditto for February 1848, .....		500	0	0	
				<u>500</u>	<u>0 0</u>
					500 0 0
April 18th ditto, ditto for March 1848,.....		500	0	0	
				<u>500</u>	<u>0 0</u>
					500 0 0
May 25th, 1848.—By Cash received from the General Treasury, being the Amount of Monthly grant sanctioned by the Court of Directors for the Month of April 1848, .....		500	0	0	
				<u>500</u>	<u>0 0</u>
					500 0 0
June 28th, By ditto ditto for May 1848, .....		500	0	0	
				<u>500</u>	<u>0 0</u>
					500 0 0
July 18th, By ditto ditto for June 1848, .....		500	0	0	
				<u>500</u>	<u>0 0</u>
					500 0 0
August 25th, 1848.—By Cash received from the General Treasury, being the Amount of Monthly grant sanctioned by the Court of Directors for the Month of July 1848, .....		500	0	0	
				<u>500</u>	<u>0 0</u>
					500 0 0
September 22nd ditto, ditto ditto for August 1848,....		500	0	0	
				<u>500</u>	<u>0 0</u>
					500 0 0
October 20th ditto, ditto ditto for September 1848, ..		500	0	0	
				<u>500</u>	<u>0 0</u>
					500 0 0
November 17th ditto, ditto ditto for October 1848,....		500	0	0	
				<u>500</u>	<u>0 0</u>
					500 0 0
December 26th, 1848.—By Cash received from the General Treasury, being the Amount of Monthly grant sanctioned by the Court of Directors for the Month of November 1848,.....		500	0	0	
				<u>500</u>	<u>0 0</u>
					500 0 0

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 Carried over,.. 10,202 0 0

		Brought forward,	802	7	0
May 8th—To Cash paid Dr. E. Roer, Editor of the Oriental Journal, his allow- ance for April, 1848,.....	100	0	0		
Ditto ditto Establishment and Contin- gencies ditto, .....	48	0	0		
		<hr/>	148	0	0
Ditto 16th ditto, Establishment for Oriental Works for April 1848,.....			72	0	0
Ditto 17th ditto, Duftry for binding Books,.....			6	0	
Ditto 22nd ditto, Extra Writer for transcribing 2000 Slokes of Rajatarangini at 3 8 per thousand, .....			7	0	0
		<hr/>			227 6 0
June 3rd ditto, Dr. E. Roer, Editor of the Oriental Journal, his Allowance for May, .....	100	0	0		
Ditto ditto his Establishment and Contin- gencies for ditto, .....	41	1	6		
		<hr/>	146	1	6
Ditto 13th ditto for, Ink for Copying Rajatarangini, ..			0	8	0
Ditto 17th, ditto Establishment for Oriental Works for May 1848, .....			72	0	0
		<hr/>			218 9 6
July 1st ditto, paid Cooly hire for Biblio- theca Indica No. 4,.....	0	4	0		
Ditto ditto Gour Churn Doss for Copying 2500 Slokes of the Rajatarangini at 3-8 per thousand, .....	8	12	0		
		<hr/>	9	0	0
Ditto 7th ditto, Dr. E. Roer, Editor of the Oriental Journal, his Allowance for June 1848, .....	100	0	0		
Ditto ditto Establishment and Contingen- cies for June 1848, .....	44	15	0		
		<hr/>	144	15	0
Ditto 15th ditto, Establishment for Oriental Works for ditto, .....			72	0	0
Ditto 24th ditto, Hoornaratullah for transcribing 24 jooz and 6 pages of the Dartoorur Amar Bahadurashali, at 3 jooz per rupee, .....			8	2	0
		<hr/>			234 1 0
August 2nd ditto, Dr. E. Roer, Editor of the Oriental Journal, his Allowance for July 1848, .....	100	0	0		
Ditto ditto ditto Establishment and Con- tingencies for ditto,.....	50	8	0		
		<hr/>	150	8	0
Ditto 5th ditto, Accountant to the Government of Ben- gal in the Revenue Department, for a Draft on the Collector of Benares, and remitted to G. Nicholls, Esq., Head Master of Benares, College, on a publi- cation of the Vedas, .....			39	8	0
Ditto 15th ditto, Sundry Contingent expences as per Bill,.....			3	11	0
		<hr/>			
			Carried over,..	1,482	7 6

*Report.*

xix

Brought forward, 10,202 0 0

Carried over,.. 10,202 0 0

			Brought forward, 1,482 7 0
August 15th, 1848.—To Cash paid for Copying 2900 Slokes of the Rajatarangini at 3 8 per thousand, ..		10 2 6	
Ditto 17th ditto, Establishment for Oriental Works for July 1848, .....		72 0 0	
		<hr/>	275 13 6
September 4th ditto, Dr. E. Roer, Editor of the Oriental Journal, his salary for August, .....	100 0 0		
Ditto ditto Establishment for ditto,....	48 0 0		
Ditto ditto Contingencies, 4 + 1 13 0	5 13 0		
		<hr/>	153 13 0
Ditto 15th ditto, Contingencies for the Oriental Department of the Librarian, .....		4 10 0	
Ditto ditto for Copying 1000 Slokes of the Rajatarangini as per bill, .....		3 8 0	
Ditto 20th ditto, Duftry for binding Oriental Works,		10 12 0	
Ditto 21st ditto, Establishment for Oriental Works for August, .....		72 0 0	
Ditto 25th ditto, for 8 wrought-iron bars for suspending Book-shelves, .....		23 9 3	
Ditto 29th ditto Dr. E. Roer's salary as Editor of the Oriental Journal for September, .....	100 0 0		
Ditto ditto ditto his Establishment ditto,	48 0 0		
Ditto ditto ditto Contingencies, ditto, ..	4 0 0		
		<hr/>	152 0 0
Ditto 30th ditto, for repairing Book-shelves, .....		2 4 0	
		<hr/>	422 8 3
October 18th ditto, Establishment for Oriental Works for September 1848, .....		72 0 0	
Ditto 19th ditto, Cooley hire for removing and arranging Book-shelves, ....	3 12 0		
Ditto ditto for a mat, .....	20 2 0		
		<hr/>	23 14 0
			95 14 0
November 2nd ditto, Dr. E. Roer's salary as Editor of the Oriental Journal for October 1848, .....	100 0 0		
Ditto ditto Establishment for ditto,....	48 0 0		
Ditto ditto Contingencies 4 + 2 14 0	6 14 0		
		<hr/>	154 14 0
Ditto 13th ditto ditto, ditto for the Oriental Department of the Library,.....		1 11 9	
Ditto 16th ditto, Establishment for Oriental Works for October,.....		72 0 0	
		<hr/>	228 9 9
December 5th 1848.—To Cash paid Dr. E. Roer's salary as Editor of the Oriental Journal for November 1848,	100 0 0		
Ditto ditto Establishment for ditto,....	48 0 0		
Ditto ditto Contingencies for ditto,....	5 5 0		
		<hr/>	153 5 0
Ditto 7th ditto, for repairing Book-shelves and supplying 112 square feet of Teak board, &c. ....		28 7 6	
		<hr/>	
		Carried over,...	181 12 6 2,505 5 0



Brought forward, 10.202 0 0

Carried over, 10,202 0 0

	Brought forward,	181	12	6	2,505	5	0
Ditto 20th ditto, Establishment of Oriental Works for November 1848, .....		72	0	0			
Ditto 26th ditto, Rev. Mr. J. Thomas, account Baptist Mission Press for printing the Bibliotheca Indica No. 1 to 4, .....		796	2	0			
Ditto ditto ditto English translation of the Text in the above 4 Nos.,.....		100	0	0			
Ditto ditto for 100 Copies of Essay the first, on the Kooch, Bodo, and Dhimal Tribes, at 3 per copy,.....		300	0	0			
		<hr/>			1,196	2	0
					<hr/>		
Ditto 30th ditto, Amount of Rev. J. Thomas's bill due for printing the "Bibliotheca Indica" No. 5 to 8, .....		870	8	0			
		<hr/>			870	8	0
Dec. 26th, 1846.—To Balance.							
Company's Papers of the new 5 per Cent. Loan deposited with the Government Agent, .....		4,000	0	0			
Cash, .....		1,376	4	6			
		<hr/>			5,376	4	6
		<hr/>					
	Company's Rupees,....	<hr/>			10,202	0	0

Errors

Calcutta, Asiatic Society, }  
the 30th Dec. 1848. }

Brought forward, 10,202 0 0

Company's Rupees, 10,202 0 0

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Excepted.

FRED. GREENWAY,  
*Officiating Accountant.*

Dr. *Abstract Statement of Account Current of Journal Asiatic Society, for the year 1847 and 1848.*

RECEIPTS.

7.—To Amount of Collections from Subscribers during this year, .....	587	0	0
48.—To ditto ditto, .....	1,586	0	0
	<hr/>		
	2,173	0	0
To Balance of Account Current closed in 1846,	402	0	4

DISBURSEMENTS.

1847.—By amount paid Mr. J. C. Sheriff at Bishop's College Press, for printing Journals for March and April 1846, .....	496	0	0	
By ditto Mr. T. Black for Lithographing drawings, .....	80	4	0	
By amount paid to the Secretary Asiatic Society on account general Fund, .....	400	0	0	
	<hr/>			
	976	4	0	
1848.—By ditto ditto during the year, .....	1,673	0	0	
	<hr/>			
	2,649	4	0	
By Balance in the Bank of Bengal, .....	5	12	4	
	<hr/>			
	Company's Rupees,....	2,655	0	4

*Report.*

Errors and Omissions Excepted,

FRED. GREENWAY,  
*Officiating Accountant.*

*Calcutta, Asiatic Society, }  
the 26th December, 1848.*

*Dependencies in favor of the Society.*

Amount of Bills outstanding from the Members down to 3rd Qr. of 1848, as per List, .....	4,564	13	8
Ditto ditto for the whole of 4th Qr. 1848, due on the 1st Jan. 1849, 159 Members at 16 Rupees per Qr.	2,544	0	0
Amount of Bills due, and outstandings on account Journal on the 1st January, 1849, .....	2,201	8	0
	<u>9,310</u>	<u>5</u>	<u>8</u>
Balance in the hands of London Agents, Messrs. W. H. Allen and Co. per Account Current, dated 30th June, 1848, £32 4 7 @ 2s. ....	322	4	8
Amount of Bills outstanding, account <i>Bibliotheca Indica</i> , .....	62	0	0
Amount of Bills outstanding on account Sale of Books in the Library, .....	703	8	0
	<u>10,398</u>	<u>2</u>	<u>4</u>
Company's Rupees, .....	7,108	13	8

E. E.

FRED. GREENWAY,

*Officiating Accountant.*

*Asiatic Society, the 30th December, 1848.*

*Demands against the Society.*

Amount due to the Rev. J. Thomas, for Printing and Publishing, .....	3,054	4	0
Amount due to the Oriental Fund, .....	1,376	6	6
Amount due to Mr. Torrens, .....	998	0	0
Amount due to Mr. Muir, .....	332	0	0
Amount due to Mr. Vos, for repairing the Society's Premises, .....	1,348	10	3
	<u>7,109</u>	<u>4</u>	<u>9</u>
Company's Rupees, .....	7,109	4	9

*Report.*

LIST OF MEMBERS  
OF THE  
ASIATIC SOCIETY OF BENGAL.

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- |                                   |                                  |
|-----------------------------------|----------------------------------|
| Anderson, Major W.                | Douglas, Capt. C.                |
| Ardall, J. Esq.                   | Dwarkanath Das Basu, Babu.       |
| Abbott, Capt. Jas.                | Dalton, Lieut. Ed. 9th Rt. N. I. |
| Alexander, Henry R. Esq.          | Earle, W. Esq.                   |
| Austen, Lieut. Albert G.          | Elliot, W. Esq. (M. C. S.)       |
| Barlow, Sir R.                    | Edgworth, M. P. Esq.             |
| Benson, Lieut. Col. R.            | Elliot, H. M. Esq.               |
| Beaufort, F. L. Esq.              | Elliot, J. B. Esq.               |
| Birch, Major F. W.                | Furlong, J. Esq.                 |
| Birch, Lieut. Col. R. J. H.       | Frith, W. H. L. Esq.             |
| Blagrave, Lieut. T. C.            | Frith, R. G. W. Esq.             |
| Bogle, Major A.                   | French, Gilson R. Esq.           |
| Bowring, L. R. Esq.               | Falcouer, Dr. H.                 |
| Briggs, Lieut. D.                 | Forbes, Lt. Col. W. N.           |
| Broome, Capt. A.                  | Gilmore, A. Esq.                 |
| Buckland, C. T. Esq.              | Gladstone, M. Esq.               |
| Bushby, G. A. Esq.                | Grant, J. W. Esq.                |
| Batteu, J. H. Esq.                | Grey, W. Esq.                    |
| Brodie, Capt. Thos. 5th Rt. N. I. | Gibeliu, M. E.                   |
| Beckwith, J. Esq.                 | Grenway, Wm. Esq.                |
| Bell, Dr. Adam.                   | Gubbins, C. Esq.                 |
| Blundell, G. Esq.                 | Gobinda Chunder Sen, Babu.       |
| Banks, Capt. J. S.                | Hannay, Capt. S. T.              |
| Campbell, A. Esq.                 | Heatly, S. G. T. Esq.            |
| Cheap, G. C. Esq.                 | Henry, Dr. Wm.                   |
| Christopher, A. Esq.              | Hill, G. Esq.                    |
| Colvin, B. J. Esq.                | Hough, H. F. Esq. Ph. Gl.        |
| Colvin, J. R. Esq.                | Hodgson, B. H. Esq.              |
| Corbyn, F. Esq.                   | Hæberlin, Dr. J.                 |
| Colvile, The Hon'ble Sir J. W.    | Hopkinson, Capt. H.              |
| Cust, R. N. Esq.                  | Houston, R. Esq.                 |
| Currie, E. Esq.                   | Huffnagle, C. (M. D.) Esq.       |
| Cunningham, Capt. J. D.           | Hurimohun Seu, Babu.             |
| Corcoran, Jas. Esq.               | Hannington, Capt. J. C.          |
| Champneys, Capt. E. G. J.         | Hall, F. E. Esq.                 |
| Colebrooke, R. Esq.               | Hamilton,—Esq.                   |
| Davidson, T. R. Esq.              | Hay, Andrew, Esq.                |
| Dunlop, A. C. Esq.                | Hearsey, Lieut. Col. W.          |
| Dodd, Jas. Esq.                   | Jackson, W. B. Esq.              |
| Dirom, W. M. Esq.                 | Jenkins, Lieut. Col. F.          |

- Jones, R. Esq.  
 Johnstone, Esq. John  
 Jerdon, T. C. Esq.  
 James, Lieut. H. C. 32d N. I.  
 Karr, W. Seton, Esq.  
 Kittoe, Capt. M.  
 Kerr, J. Esq.  
 Keane, Rev. W.  
 Laidlay, J. W. Esq.  
 Latter, Lieut. T.  
 Loch, G. Esq.  
 Lackersteen, Count.  
 Logan, J. R. Esq.  
 Lamb, Dr. G.  
 Low, Col.  
 Lawrence, Sir H.  
 Mackenzie, J. Esq.  
 MacLeod, D. F. Esq.  
 Maddock, Hon'ble Sir T. H.  
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 M'Clelland, Dr. J.  
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 Newmarch, J. Esq.  
 Ommaney, M. C. Esq.  
 O'Shaughnessy, W. B. Esq.  
 Ouseley, Lieut. Col. J. R.  
 Ouseley, Capt. R.  
 Peel, Hon'ble Sir L.  
 Phayre, Capt. A.  
 Prinscp, C. R. Esq.  
 Prosonocoomar Tagore, Babu,  
 Pratt, Rev. Mr. J. H.  
 Pakenham, Capt. G. D.  
 Radhakant Deb, Rajah Babadoor  
 Ramanath Tagore, Babu.  
 Ramgopaul Ghose, Babu.  
 Rawlinson, Major H. C.  
 Ripley, Lieut. F. W.  
 Rogers, Capt. T. E.  
 Ram Chand Sing, Rajah.  
 Ramaprasad Roy.  
 Richards, Rev. J.  
 Sleeman, Lieut. Col. W. H.  
 Sherwill, Lieut. W. S.  
 Spilsbury, G. G. Esq.  
 Strachey, Lieut. R.  
 Strong, F. P. Esq.  
 Sutehurn Ghosaul, Rajah Bahadoor.  
 Stewart, Dr. D.  
 Sandberg, Rev. P. L.  
 Slater, Rev. S.  
 Staples, Lieut. N. A.  
 Scott, Jas. S. B. Esq.  
 Sandes, F. C. Esq.  
 Skinner, C. B. Esq.  
 Strachey, John, Esq. (C. S.)  
 Stubbs, Lieut. F. W.  
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 Walker, H. Esq.  
 Wilby, G. R. Esq.  
 Willis, J. Esq.  
 Waugh, Lieut. Col. A. S.  
 Wilson, Daniel. The Right Rev.  
 Lord Bishop of Calcutta.  
 Young, Dr. R.

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 Austen, Lieut. Albert G.  
 Bell, Dr. Adam.  
 Banks, Capt. J. S.  
 Coreoran, Jas. Esq.

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 Pakenham, Capt. G. D.  
 Richards, Rev. J.  
 Ramchund Sing, Rajah.  
 Ramapersaud Roy, Babu.  
 Strachey, John, Esq.  
 Stubbs, Lieut. F. W.  
 Tayler, W. Esq.  
 Thornhill, C. B. Esq.

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 G. Blundell, Esq.  
 C. Huffnagle, Esq.  
 Sir H. Lawrence, K. C. B.

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LOSS OF MEMBERS DURING THE YEAR 1848.

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Hodgson, Major General J. A.  
 Lushington, G. T. Esq.  
 Massey, G. Esq.  
 Stacey, Lieut. Col. L. R.  
 Wileox, Major R.

*By Withdrawals.*

Debendranath Tagore, Babu.  
 Goodwin, Major H.  
 Hume, J. Esq.  
 Jameson, W. Esq.  
 Knighton, W. Esq.  
 Linstedt, E. Esq.  
 McKilligan, J. P. Esq.  
 McLeod, W. C. Esq.  
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Nripendranáth Tagore, Babu.  
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 Thwaites, R. Esq.  
 Thompson, Rev. Mr. J.  
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*By departure to Europe.*

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 Boyes, W. E. Capt.  
 Brandreth, J. E. L. Esq.  
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 Forbes, Lieut.-Col. W. N.  
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 Grant, W. P. Esq.  
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 Hay, Lord Arthur.  
 Macqueen, Rev. L.  
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Dr. J. D. Hooker, R. N. F. R. S.

Professor Henry, *Princeton, United States*.

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\* Exempt from payment of Subscriptions.

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JOURNAL  
OF THE  
ASIATIC SOCIETY.

JANUARY, 1849.

*A Seventeenth Memoir on the Law of Storms in India, being Storms of the China Seas from 1842 to 1847, and some of the Northern Pacific Ocean, from 1797. By HENRY PIDDINGTON, President of Marine Courts of Enquiry, Calcutta.*

PART I.—CHINA SEAS.

[In this paper the word Cyclone is used to express any *turning* gale or typhoon.]

In the sixth of this series of Memoirs, (Journal Vol. XI.) I have collected all that could then be obtained relative to the storms of the China Sea from 1780 to 1841, and I have reason to believe that in no one instance, then, had any contradiction been found to the law for the tracks which was announced as the result of the researches embodied in that paper, to the which, for the China sea, the present is a necessary supplement.

This law may be stated in general terms to be that, though varying at different seasons of the year in the Typhoon months, yet they are always from some point to the Eastward of the meridian, or from between N. b E. and S. b E. to the Westward and North-Westward, having, sometimes, not straight but curving tracks; and the utility of tracing out, if documents can be obtained, the track of every Cyclone, in this and in every sea, is to ascertain beyond contradiction and controversy if any Cyclone has travelled from any part to the westward of the meridian, and further, to obtain more exact data on which to found our judgment of what the average tracks in each separate month are most likely to be; for upon the right knowledge of the tracks of the Cyclones, whether deduced

at the time at sea, or laid down from previous research, depends the successful management of the ship when involved in or threatened by them; and it will be seen that, as from analogy, I had supposed it possible, so we *have* now found that some rare anomalies of tracks to the Eastward of the Meridian do take place in two dangerous parts of the sea, the Straits of Formosa and Bashee Passage.

In the part relative to the storms of the Northern Pacific Ocean, I have comprised all that I have been able to collect relative to this great, and to us, very important field of our research, comprising as it does nearly the whole Eastern Coast of China, the stormy seas of Japan, and that great tract extending to the N. W. Coast of America, and bounded perhaps only by the Equator,\* in which these wonderful meteors take their rise.

1840.

#### TRACKS A. and B.

##### *The GOLCONDA's Storm, September 1840.*

*Log of the Ship HASHMY, Captain BUCKLE, from Singapore to China.*

In my fourth Memoir, (Journal Asiatic Society for 1841, Vol. X.) I showed that this unfortunate ship, the *Golconda*, with 300 Madras troops on board, was in all probability lost on the 23d—24th September, about the spot where the centres of two tyfoons, the one from the E. S. E., and the other from the S. by E. met; but though indubitably there were two storms, it was not possible from the logs of one ship for each storm† to affirm that we had laid down correctly the exact line of the tracks.

Having subsequently received a capitally well kept log from Captain Buckle of the *Hashmy*, I find with great satisfaction that the track of the Northern Cyclone is perfectly correct as to direction, the only correction to be made being, that the centre of the 22nd, the first day, requires to be placed 70 miles farther to the Eastward: but at the approach of Cyclones, the estimation of the ship's distance from the centre is always of great uncertainty without hourly observations of the Barometer and careful measurement of the ship's run.

\* At the Kingsmill groupe, upon the Equator, hurricanes are known to prevail.

† The London *Thetis* and the Calcutta *Thetis*.





I give below the abridged log of the *Hashmy*, reduced to civil time, and then a few brief remarks.

“On the 18th September 1840, at 8 A. M. the *Hashmy* sounded in 26 fs. on the Macclesfield Bank; she had light breezes and sultry weather at noon, when she had no soundings at 100 fs. Lat. observed,  $16^{\circ} 20' N.$ ; Long. Chr.  $114^{\circ} 24' E.$ ; Bar. 29.90; Simp. 29.56; Ther.  $89\frac{1}{2}^{\circ} E.$  To midnight light winds.

19th. Sept.—A. M. and till noon the same winds and fine. Noon Lat.  $17^{\circ} 34'$ ; Long. Chr.  $114^{\circ} 39'$ ; Bar. 29.89; Simp. 29.55; Ther.  $88^{\circ}$ . To midnight light winds inclining to calm and hazy weather.

20th.—Light airs westerly and N. westerly, and fine till noon, Lat.  $18^{\circ} 28' N.$ ; Long. Chr.  $114^{\circ} 37' E.$  Bar. 29.87; Simp. 29.55. Ther.  $86\frac{1}{2}^{\circ}$ ; P. M. wind light at N. W.; at 8 north; squally and so till midnight.

21st.—Daylight increasing fresh breeze with dark squally appearance. At 8 A. M. wind marked N. N. E. and the same at noon, when a strong breeze with a heavy head swell; Lat.  $18^{\circ} 47' N.$ ; Long.  $115^{\circ} 48' E.$  Bar. 29.77; Simp. 29.47; Ther. 85. P. M. Wind at 2 P. M. N. N. E. and at 9 N. b. E. Increasing bad weather and making preparations to meet it. Midnight, fresh gale, and heavy head swell N.; for the last 36 hours the ship has been standing to the N. E. and eastward; Lat. about as at noon.

22nd Sept.—A. M. breeze increasing and north a heavy sea getting up; at daylight hard gale with heavy squalls; sails blowing out of the bolt ropes, wind always north; ship hove to on *larboard* tack; noon heavy gale with a high and confused sea. A. M. pumps constantly going. Lat. Acct.  $18^{\circ} 30' N.$ ; Long. Acct.  $117^{\circ} 18' E.$  Bar. 29.32; Simp. 29.04. P. M. still increasing; 4 P. M. a perfect hurricane from N. eastward; at 11 P. M. after a slight lull the wind shifted to East and S. E. and continued to blow if possible with more violence than before, the glasses having been, between this time and 8 A. M. of 22rd, down to—Bar. 28.65; Simp. 28.40; Ther.  $80\frac{1}{2}^{\circ}$ . At midnight wind marked East.

23rd Sept.—Hurricane still continuing; at 8 A. M. the glasses shewed indications of rising though still blowing tremendously hard. During the strength of the gale the ship lay buried in the seas which made a clear breach over her, expecting at every minute to lose the masts. At 3 A. M. Bar. 28.65; Simp. 28.40; Ther.  $81\frac{1}{2}^{\circ}$ ; at 4 Simp. began to rise slightly. At 8 Bar. 28.90; Symp. 28.95; Ther.  $80\frac{1}{2}^{\circ}$ . Noon wind marked S. E. Lat. Acct.  $18^{\circ} 16' N.$ ; Long.  $116^{\circ} 30' E.$  Bar. 29.20; Simp. 29.08. Ther.  $81^{\circ}$ . P. M. heavy gale, furious gusts and high cross sea; wind S. E. and at 4 P. M. S. E. b. S. At 3.30 bore up and attempted to run under the reefed foresail, but the heavy seas constantly breaking on board and the squalls occasioning the ship to broach too, hove too again at 6.30 P. M. on starboard tack; wind S. E. b. S.; head to N. E.

24th Sept.—A. M. strong gale; at 2 set the reefed foresail again. Daylight bore

away, wind S. E. Gale moderating, but a high cross sea. Noon Lat. Obs.  $19^{\circ} 19' N$ ; Long. Chr.  $115^{\circ} 39' E$ ; Bar. 29.55; Simp. 29.42; Ther.  $80^{\circ}$ . After this fine. The ship arrived in sight of the Great Lena at 5 P. M. on the 25th, carrying a fine S. E. breeze all the way."

The following table is that which is given at p. 901 of Vol. X. of the Journal, with the addition of the *Hashmy's* log to it, from which it will at once be seen how remarkable are the differences between her winds and those of the *London Thetis*, though only from 90 to 150 miles apart.

*Tabular view of the Hurricane of 22nd and to 24th September 1810, in the China Sea, as experienced by the ships THETIS of London, THETIS of Calcutta, and HASHMY.*

Date.	Ship's Name.	Winds and Weather.	Lat. N.	Long. E.	Bar.	Simp.	Ther.	Remarks.
19th Sept. at Noon.	London Thetis.	Light Southerly, hot and sultry weather, . . . . .	14 <sup>o</sup> 20'	113 <sup>o</sup> 39'	29.94	....	86 <sup>1</sup> / <sub>10</sub>	
	Calcutta Thetis.	Light S. W. airs and fine, . .	11 44	115 15	29.79	....	92	
	Hashmy.	Light breezes and fine, hazy.	17 34	114 39	29.89	29.55	88	
20th Sept. at Noon.	{ London Thetis. Calcutta Thetis. Hashmy.	Calms and light S. E. airs, and sultry, . . . . . S. W. and W. S. W. airs and fine, . . . . . Light airs, West and N. W. P. M. N. W., . . . . .	14 53 12 40 18 28	114 9 111 57 114 37	29.90 29.79 29.87	.... .... 29.55	87 89 86 <sup>1</sup> / <sub>2</sub>	At midnight squally weather.  { 8 P. M. northerly winds and squally to midnight. Noon rain, thunder, and squally, wind N. W.; Simp. very unsteady during this 24 hours.
21st Sept. at Noon.	{ London Thetis. Calcutta Thetis. Hashmy.	Light N. W. wind, gloomy and close, . . . . . Light from W. N. W. till 7 P. M.; at 7 breeze freshening from N. N. W.; thick cloudy weather, . . . . . N. N. E. strong breeze and heavy head swell, . . . . .	15 57 13 20 18 47	115 9 112 40 115 48	29.87 29.70 29.77	29.30 .... 29.47	84 89 85	By midnight fresh gale N. b. E. and heavy head swell; making preparations to meet it.



22nd Sept. at Noon.	{ London Thetis. Calcutta Thetis. Hashmy.	N. N. W. increasing breeze and sea, .....	16 20 115 30	29.64	29.12	85½	{ Threatening sea rising, glass falling, and wind increasing; hove to. Increasing with gloomy weather; running to the N. E.
22nd Sept. at midnight.	{ London Thetis. Calcutta Thetis.	W. b. S. strong breezes, .. Heavy gale, North, veering to N. Eastward; high sea, .. W. N. W. violent gale, terri- fic squalls, .....	14 55 114 55	29.56	....	96	{ Barometer still falling.
	{ London Thetis. Calcutta Thetis.	S. W. increasing and increas- ing squalls; running to the N. E. and N. W. since noon, .....	18 30 117 18	29.32	29.04	..	{ Sea getting up from S. W. After a slight lull at 11 P. M. shift- ing from N. E. to East and S. E. Barometer marked between mid- night and 8 A. M.
	Hashmy.	Hurricane from Eastward more violent than before, ..	.. .. .	28.65	28.40	80½	{ No abatement. High sea; lost mizen topmast. { Bar. 3 A. M. 28.65; Simp. 28.40; at 4 R. M. rising. { Bore up at 5 P. M. Sea higher than in the gale. Sea very cross. { 4 P. M. bore up but hove to again at 6.30 P. M.
23rd Sept. at Noon.	{ London Thetis. Calcutta Thetis. Hashmy.	S. W. almost a hurricane, .. S. W. furious typhoon, lying to, Wind S. E. heavy gale, furi- ous gusts and cross sea, ..	16 40 116 15 15 50 115 13	29.20 28.80	28.73 ....	..	{ Bore up at 5 P. M. Sea higher than in the gale. Sea very cross. { 4 P. M. bore up but hove to again at 6.30 P. M.
23rd Sept. at midnight.*	{ London Thetis. Calcutta Thetis.	About South, moderating fast, .....	18 16 116 30	29.20	29.08	81	{ Fine and squalls, wind S. E. and moderate to Macao. { A. M. rolled away the mainmast at 8 P. M., wind S. S. E.
	Hashmy.	S. W. heavy, typhoon, squalls, not so frequent, .....	.. .. .	29.50	....	..	
	Hashmy.	S. E. b. S. but abating, .....	.. .. .	....	....	..	
24th Sept. at Noon.	{ London Thetis. Calcutta Thetis. Hashmy.	S. S. E. moderate, .....	18 25 117 20	29.80	....	81½	
	{ London Thetis. Calcutta Thetis. Hashmy.	S. gale breaking, .....	17 14 115 35	29.40	....	..	
	Hashmy.	Bearing up, .....	19 19 115 39	29.55	29.42	80	

\* *Galconda* probably lost about this time.

## REMARKS.

Upon laying down the *Hashmy's* track and taking the storm, if not fairly begun, to be *threatening* at noon on the 25th, I find that producing backwards the track of the London *Thetis'* storm upon the chart appended to the Fourth Memoir, a point on it would agree for this day very well. The wind being at N. N. E. would place the centre of the storm at E. S. E. from the ship, and taking backwards the distance from noon to midnight on the 22nd, as there marked, it also agrees so far as such acute angles and large distances can be expected to do, the centre at noon on the 22nd would fall, however, about 70 miles further to the eastward than where it is marked on our chart, when laid down by the positions of the two ships, the *Hashmy* to the north-west, and the London *Thetis* to the W. S. W. of it.

For the 23rd, when both the ships lying too had fallen into the adjacent quadrants, from the storms having rapidly passed on between them, making the *Hashmy* to have now the centre bearing S. W. and the London *Thetis* the centre N. W. from them respectively, our centre is exactly correct, and the weather and Barometer exactly as they were to be expected, i. e. the weather more severe, because the centre was now nearer to the vessel, and the Barometer rising, because it had passed and was leaving her.

On the 24th, all the ships had fine weather. We have here an instance, and it is principally on that account that I have placed these two tracks again on our present Chart, of the complete reliance which, with careful observations of the wind, weather and Barometer, may be placed on our science; for no careful commander can now in future doubt, I should think of the awful risks which running on with a falling Barometer may expose him to, and no sailor who understands common trigonometry can doubt, I should suppose, of the accuracy of our deductions, and that they might, with the knowledge we now possess of the laws by which the Cyclones of the China Seas are governed, have been perfectly made on board the respective ships (including here the unfortunate *Golconda*, with her 400 victims) at any time during the tempests, so as to indicate to them all the best plans for escaping from, and even for profiting by the Cyclones, by a little curving in their courses.\*

\* Since this was written I have been favoured by my friend, Dr. Collins of the ship *Queen*, with a copy of the log of the ship *Sophia*, which ship, with the *Minerva*

## TRACKS C. and D.

## CHUSAN and TUNG-HAI\* Tyfoons, September 1843.

The tracing of these Cyclones in so high a latitude is of great interest as connected with those of the Japanese and Formosan seas. I am indebted to Commander Vyner, *H. M. S. Wolf*, for the following.

“ On the 1st of September 1843, a hurricane commenced, the centre of which passed over the Chusan archipelago, doing immense damage, and it would appear that the whirlwind was travelling from the S. E. to the N. W., as it was felt severely at Woosung in the Yang-tse-kiang river, about 120 miles from Chusan, about nine hours afterwards.

At about sunset of the 31st of August a dirty appearance of the weather began, wind from the N. N. E. with drizzling rain; about  $\frac{1}{2}$  past nine at night the wind began to increase and the Barometer to fall a little; at 10.30 P. M. a hurricane commenced at its full power from N. E. suddenly, and then the barometer commenced to fall rapidly, and by 2 A. M. of the 1st was at 28.22 and did not go lower. The commencement of the hurricane was so sudden that no apprehension was contemplated by any of H. M. ships or those of the merchant service, all being taken by surprise with their boats in the water, and top-gallant yards across.

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in company, ran up on a N. W. course from the 22d to the 23rd, just across the Eastern and S. Eastern borders of the Cyclones of the ships London *Thetis* and Calcutta *Thetis*, with, of course, a heavy S. Westerly gale amounting in violence to a typhoon, and on the 23rd, when exactly on the track over which the Cyclone of track B. had just passed, they hove too *fearful of a shift of wind*. I need not remark that they would have been perfectly safe in running on then. We have thus, from the logs of three separate ships an exact corroboration of what was originally laid down from two.

\* TUNG-HAI, (the Eastern Sea,) is the name given by the Chinese to the sea enclosed between their Eastern coasts and the chain of islands which stretches from the south of Corea and includes Japan and Formosa. The Northern part of this sea from about 35° North, is the Wang-Hai or Yellow sea. The Japanese or Japan sea is the sea to the North of Japan and to the East of Corea. We want a fixed name for this first sea, for Eastern sea is far too indefinite; it might be distinguished by its Chinese name of Tung Hai, or as the Formosa sea? though this last might confound it again with the Straits of Formosa. Perhaps the Loo-Choo Sea would be the best we could choose for it, and I have so called it on my Chart? In a French Atlas of 1838, the straits between Formosa and the Coast of China (our straits of Formosa) are called the straits of Fokien, and the Tung Hai, for which I propose the name of the Loo Choo Sea, is called the Corean Sea, which would more appropriately belong to the Yellow sea. These names are of no great consequence, it will be said, but, it is to be regretted that we cannot settle them.

When once the hurricane began it was fruitless to attempt sending men aloft, for they could do no more than with great difficulty prevent themselves from being blown out of the rigging,\* but during the  $\frac{1}{2}$  hour that the centre of the whirlwind was passing, it being a dead calm, the opportunity was seized to secure the boats and get the masts down.

As soon as the half hour had expired the hurricane again struck us from S. W. and blew violently until 6 A. M. when it gradually subsided.

The Barometer commenced rising rapidly from the moment the N. E. wind ceased, and continued to rise throughout the S. W. part of it. Three vessels were driven on shore, the barracks at Sin-kea-Mun (East end of Chusan) were blown down, 1 soldier killed and several wounded. Many houses were blown down and unroofed; crops entirely destroyed and many lives lost both on shore and at sea amongst the Chinese; trees were torn up by the roots and the whole country devastated. We learned from the old inhabitants of the island and the fishermen, that such a hurricane had not visited Chusan for 11 years, at which time a similar one took place; they are said to be uncommon."

In reply to subsequent enquiries, Commander Vyner says:—

"I have not heard of any vessel meeting the hurricane at sea, nor of its being felt on shore or at sea to the Southward of Chusan; that it was felt at Woosung is certain, although I am not sure if the calm was felt there, but I think it was.

I remember perfectly well a vessel arriving at Chusan about two days after the hurricane which was within a hundred miles of the place at the time and felt nothing of it. It would thus appear that the whirlwind was formed in the neighbourhood of Chusan."

#### TRACK D.

##### *CACIQUE'S Tyfoon, September 1843.*

A Canton paper gives the following account of a second Tyfoon following close upon the one just described. After briefly relating the particulars of the Chusan Tyfoon of the 1st and 2nd, which agree exactly with the foregoing, and adding that in it the *Cacique's* Barometer fell to 28.30,† it continues:—

"The *Cacique* sailed from Chusan on the 4th inst., and on the 5th, about 100 miles North of Formosa, again encountered a heavy Typhoon commencing with a N. E. gale which continued with a heavy sea from the Eastward until 1 P. M., when, as at Chusan, it fell suddenly calm, during which thousands of

\* This was in an English man-of-war, and in a snug anchorage, and it gives us some idea of what the destructive fury of these meteors must be.

† Newspaper says 27.10, but this, by a subsequent paragraph, appears to be certainly a misprint.

birds threw themselves on the deck. In a short time the wind rose again from the S. W. and soon increased to a terrific hurricane. Anticipating the change of wind, they set the close-reefed foretopsail and foretopmast stay-sail just in time to catch the wind as it struck the vessel, by which means she was payed off before the wind, when all sail was taken in, leaving her scudding under bare poles till 5.30 P. M. when the easterly swell having gone down considerably and the wind abating a little, the *Cacique* was hove to with her head to the S. S. E. under a close-reefed maintopsail and balanced mizen. At midnight the weather became moderate, and the barometer, which at 1 P. M. was down to 28.25, had risen to 29.20. The *Cacique* stood the tempest remarkably well, and lost nothing of consequence; made no water, and did not ship a single sea. She saw the Brig *William* off Oksue apparently beating away for Chimmoo, and arrived at Hongkong on the 13th, after a remarkably short passage of 19 days. In another notice in the *Friend of China*, it is said that this Cyclone occurred in 27° N. Long. 122° East and that, the ship's barometer gave 8 or 9 hours warning, the calm lasting only about 5 minutes.

I have not been able to obtain any farther notice of this Cyclone, but there is no doubt that it was travelling like the former from the S. E. to the N. W.

#### TRACK E.

*Typhoon of the ATIET ROHOMAN and SHAH ALLUM, November 1843.*

These two vessels experienced a severe Typhoon in November 1843. The following are the abridged logs, with some additions, from the *Singapore Free Press* of 29th November.

*Abridged Log of the ship SHAH ALLUM, Captain EVANS, reduced to Civil Time.*

The Ship *Shah Allum*, Capt. Evans, from China to Bombay, was at Noon 31st Oct. 1842 in Lat. 19° 30' N.; Long. 112° 25' E.; Barometer 29.70, and at 10 P. M. 29.60, having left the Grand Ladrone at sunset the preceding evening. She was running to the S. S. W. 9 knots with wind N. Easterly and cloudy weather, 2 P. M. wind marked N. N. E. course S. S. W.  $\frac{1}{2}$  W. 142 miles to 3 A. M. on the 1st Nov. when she hove too. Midnight strong gale; 1st Nov. 3 A. M. heavy gale from the Northward (N. N. W.) hove too. Daylight typhoon from the N. W. 8 A. M. Bar. 29. 10 A. M. wind veered suddenly to the westward with greater violence. Mountainous sea; carried away quarter gallery, boats, &c. 10.30 A. M. lost main and mizen topmasts. Noon Bar. rising from 29.10 o 20, but typhoon still blowing with great fury.

P. M. wind veered to S. W. "with extraordinary gusts at times;" 1 P. M. Bar. 29.30. Gale moderating. At 3 wind South and clearing up; Bar. 29.40. Sun-

set made a little sail. During the night the weather became fine. Wind at 10 P. M. marked East.

2nd Nov.—At noon had made from 8 P. M. on the 1st to noon 2d, 66 miles on a S. b. W. course, Lat.  $16^{\circ} 39' N.$ ; Long.  $110^{\circ} 12' E.$  The newspaper quoted above adds to this:—

“Captain Evans says that the Barometer rising so high the day previous to the gale and falling so gradually, confirmed him in the opinion that they were going to have a strong N. East monsoon, and he carried on a press of sail to get well clear of the Paracels, but from observations taken the day after the gale they were during the worst of it about 20 miles W. N. W. from the North Shoal and drifting to the South East, but the wind veering to the Southward, S. E., and latterly to E. N. E., they were drifted to the W. S. W., 40 miles off the North Shoal by noon of the 2nd, when they had good observations. He is not certain whether the Barometer fell below what he has mentioned above, as he did not leave the deck from 10 P. M. until the sea washed the stern windows and boats away, but he thinks it did not, as about 10 and 11 it blew exceedingly severe from west and W. S. W.”

*Abridged Log of the Ship ATIET ROHOMAN, Captain LUGRIN, from Macao bound to Singapore—reduced to Civil Time.*

The *Atiet Rohoman* left the Dome of the Grand Ladrone bearing N. E.  $\frac{1}{2}$  E. and that of the Little Ladrone N. E. in 16 fs. water at 5h. 50' P. M. on the 30th October, 1843, with a N. N. easterly wind, 5, 6 and 7 knot breeze and a heavy S. E. swell to midnight.

31st Oct.—Wind N. E. b. E. and N. E. b. N.  $8\frac{1}{2}$  knot breeze, steering to the S. S. W.; at noon Lat.  $19^{\circ} 10' N.$ ; Long.  $111^{\circ} 42'$ ; strong gales and cloudy; P. M. hazy and increasing. At 10 P. M. a sudden gale from the N. N. E. Ship running 8 knots to the S. S. W.

1st Nov.—1 A. M. blowing a severe typhoon N. N. E.; 3 A. M. typhoon veered to N. E. Sails cut away and blowing from the yards. 9 A. M. wind marked N. E. Noon vessel half swamped, at 5 A. M. the wind is said in the remarks to have veered to E. S. E. 9 A. M. lost maintopmast, mizenmast, boats and an anchor. Noon severe typhoon; 3 ft. water in the hold; Lat. about  $17^{\circ} 03' N.$ ; Long.  $110^{\circ} 39' E.$  P. M. wind marked S. b. E. severe gale. Ship's head west; carried away the head of the rudder; at  $6\frac{1}{2}$  P. M. moderate and veered to the S. E.

2nd Nov.—A. M. clearing up and repairing damages; noon Lat.  $17^{\circ} 32' N.$ ; Long.  $109^{\circ} 13' E.$

REMARKS.

It is evident from the veering of the wind that these two ships were on opposite sides of a Cyclone, the *Shah Allum* on the 1st at 10 A. M.

being close to the centre, which was passing to the northward of her (wind West) while the *Atiet Rohoman*, at 9 A. M. had the typhoon of excessive violence at N. E. ; and by noon it had veered to S. b. E. The average change with the first of these ships we may call from N. W. to S. W. giving an east course for the centre of her Cyclone, and for the *Atiet Rohoman* from N. N. E. to S. b. E., giving a course of about from S.  $85^{\circ}$  east to N.  $85^{\circ}$  W., or say a W.  $\frac{1}{2}$  N. course and the mean the two would therefore be a W.  $\frac{1}{4}$  N. course.

But this assumes the two ships to have been stationary like two islands, whereas both ran, and were drifted considerably to the southward before being drifted back to the northward. We cannot calculate this to any exactness, but we may say, with all allowances, that the Cyclone must really have been travelling, for them, about from E. b. N. to W. b. S., which is the track I have assigned to it. We have no further data for the distance it may have travelled from the eastward before reaching these two ships, but as it lasted a considerable time with them, and was yet, by the rapidity of the veering near the centre, travelling with considerable velocity, I have produced the track about four degrees to the eastward, though it probably extended farther, and as we shall see in the cyclones of 1847, may very probably have been felt, if it did not fully reach to the shores of Cochin China, about Turon Bay.

#### TRACK F.

##### *Manila Typhoon of October, 1843.*

I have for this Cyclone but a single log, though a carefully detailed one, and quite sufficient to authorise us to mark off the track of it across what is, at some seasons, a dangerous anchorage, and where too much caution cannot be used, whether lying at Cavite or off Manila, during the whole of the typhoon months. The extract of the log which I have is contained in a letter from the Captain of the American ship *Unicorn*, to Mr. Redfield, and by him forwarded to me. It is as follows:—

“October 30th, 1843.—(Civil Time at Manila,\*) begins calm and dark lowering weather, Bar. 29.90. 3 P. M. the same; Bar. 29.90. 4 P. M. a light breeze from N. N. E. Bar. same; 6 P. M. wind veered to north, increasing dark gloomy weather, Bar. 29.89. 7 P. M. thick and rainy, very sultry and has been for 24 hours; *felt two heavy shocks of an earthquake*; blowing fresh, Bar. 29.84; 9 P. M.

\* Ship then lying at anchor in the Bay of Manila; this was the 29th by European account.

wind veered to N. by W. increasing thick and rainy, a wild look. Bar. 29.79; got down top-gallant masts and yards; 10 P. M. wind shifted suddenly to N. W. and commenced blowing hard squalls, steady rain, dark and gloomy; Bar. 29.75; 12, blowing very hard in squalls, sea making up; Bar. 29.55; 2 A. M. blowing furiously, let go 3d anchor and veered out all the cable; ship holding on, others dragging past us; Bar. 29.35. 4 A. M. blowing a hurricane; got topmasts and yards down, let go stream anchor, the fleet driving past us; a heavy sea on, ship pitching bows under, hard squalls, steady rain, dark gloomy weather; Bar. 29.30. 6 A. M. blowing furiously in squalls, the ship started her anchors and drove 4 miles before she brought up; drove from 5 into  $3\frac{1}{2}$  fathoms water; an English Brig, driving past us broadside to the wind, sea making a breach over her; Bar. 29.20; the trees began to give away to the force of the wind, many on the roads lying prostrate. 8 A. M. gale unabated, three vessels on shore; Bar. 29.20. Noon, gale in its fury, steady rain in torrents. Bar. 29.40. 1. 30. A. M. it fell a still calm instantly for five minutes, the wind shifted suddenly to S. S. E. and blew as hard as ever; the rain pouring in torrents; Bar. 29.44. 2. 30. A. M. moderating fast, sea going down rapidly, wind S. S. E.; Bar. 29.51. 4 A. M. wind veered to south, more pleasant; Bar. 29.66. 6 A. M. calm and cloudy, Bar. 29.75; much sea on.

In this gale three vessels drove on shore and all the fleet at anchor in the Bay dragged 3 or 4 miles. It appears the gale was felt severely in the China sea, as two English ships came in dismasted after it, one of them was off the Pratas Shoal at the time, from Macao bound to Chusan, the other off the Macclesfield Bank, from Macao for Bombay.

A Brig was at the time in Bernadino straits and reported having a very strong N. W. wind but clear weather and smooth sea."

A Singapore newspaper gives the following notice, but it is uncertain if at this late period of the season the gale may not have been the monsoon and not part of a Cyclone. From the dates it could not have been the same as the *Unicorn's*.

"The *Cecilia*, Captain Buttry, suffered severely during the late gale. At the commencement, on the 28th October (sea time) in Lat.  $17^{\circ} 32' N.$ ; Long.  $119^{\circ} 49' E.$  met with heavy gales from the N. N. E. which continued with increasing fury until the 31st, when it blew a hurricane. The *Cecilia* lost two men, one of whom was washed overboard. Part of her cargo was obliged to be cast overboard, and the copper sheathing was washed from the starboard side of vessel. On the weather moderating on the 2d November, found themselves in Lat.  $17^{\circ} 4' N.$ ; Long.  $112^{\circ} 57' E.$ "

The shifts experienced by the *Unicorn*, N. W. to S. S. E. gives a



track of from N. 56° East to the South 56° West, across the anchorage of the Bay of Manila.

### TRACK. G.

#### *The EDMONSTONE'S Tyfoon of Nov. 1844.*

*Abridged Extract from the Log of the Ship EDMONSTONE, Captain McDOUGAL, from Hong Kong, bound to Singapore, reduced to Civil time.*

The *Edmonstone* left Hong Kong on the 14th Nov. 1844, and at Noon on that day was in Lat. 21° 3' N.; Long. Chr. 113° 6' E.; P. M. to midnight a 6 and 7 knot breeze from N. N. E. and fine weather.

15th Nov.—A. M. the same breeze; Noon, Lat. 18° 42'; Long. East 110° 50'; Bar. not given; having steered S. S. W.  $\frac{1}{2}$  W. 157' for the preceding 24 h. P. M. the same, midnight and fine.

16th Nov.—Daylight; rolling heavily. Wind always N. N. E. to 8 A. M. wind N. b. E.; at 11. A. M. in first reefs; Noon no Obsr. Lat. Acct. 16° 15'; Long. 110° 51' E.; P. M. strong gales and threatening appearance, made all snug. Wind N. b. E.; Bar. 29.70. At 5. P. M. 29.60; ship running from Noon to 6 P. M. S. S. E. when she hove too with head to the East, position by estimation being 40 miles south of the Triton's Bank and on its meridian; when brought to at 10. P. M. Bar. 29.00; midnight, wind the same, Bar. 28.50; at 9 P. M. the last of the sails, the main-topsail, blew from the yard, the quarter boats, furled sails, &c. being all gone;—"the force of the wind and rain at this time was such that we could not shew our faces over the rail." At midnight blowing a most furious Tyfoon, all the masts were blown out of the ship with the exception of the foremast.

17th Nov.—Found it impossible to cut away the wreck till Noon; 3. A. M. wind N. b. E.; 4, Bar. 28.60; 5 A. M. wind N. W.: at 8 West; 10. S. W. and at Noon south; Lat. Acct. 14° 22'; Long. 111° 31' East; P. M. wind if any thing abating; Bar. 28.60. Midnight "the sea as high as ever and rising in peaks high over the ship." Wind hauling to the south.

18th Nov.—To noon the same weather as before: Bar. 28.80; awful sea on and much difficulty in keeping the Lascars to the pumps. Wind abating.

19th Nov.—Daylight bore up under the (newly bent) foresail, "wind being again at North (it having gone completely round the compass) where it had been stationary throughout this severe tyfoon; Noon, Lat. Acct. worked back from 20th, 11° 57' N.;\* Bar. 29.20; Ther. 70°. P. M. running to the south with a fine Northerly breeze."

\* With allowance for the sea, but not for the Storm Current.

The wind here seems to have been steady at N. b. E. from 6 P. M. to 3 A. M. or for 9 hours, or as nearly so as could be ascertained at night, and in such weather, during which time we may allow the ship to have made a drift of at least 3 miles per hour, or 27 miles in all. The fall of the Barometer from 5 P. M. to 10 P. M. was from 29.60 to 29.00 or 0.60. in 5 hours, giving an average fall of 0.12 per hour. By the rule given at p. 199, of the Sailor's Horn Book, this would give 80 miles for the distance of the centre at  $7\frac{1}{2}$  P. M., and we find that it passed her, though without any calm, about 4 A. M. on the following morning, or at  $8\frac{1}{2}$  hours from this time, which would give a rate of travelling of somewhat less than ten miles per hour.

We find that though the ship was drifting to the southward (about S. b. W. appears to have been the drift made good by the log) she still had the wind steady from N. b. E. up to 3 A. M., which would give her a drift of say 22 miles about up to 4 A. M. when, as the wind was N. W., the centre then passing close to the northward of her position bore N. E. of her. Projecting this it gives a course of from E.  $\frac{1}{4}$  N. to W.  $\frac{1}{4}$  S. for the track of the storm, which is that which I have assigned to it.

#### *Cyclones of 1845.*

The following newspaper notice is all that I possess relating to this Cyclone, if it was one, for it may have been only the onset of the monsoon, though the veering of the wind being as much as ten points, gives great probability to the supposition that it may have been a true Cyclone travelling to the south-westward. My principal motive for inserting it however is the season at which it occurred, which is earlier than any typhoon of which we have a record, and we may, as so frequently has been the case, obtain other documents to connect with it. At present I do not insert it as a track, but it will serve to put the vigilant mariner on his guard.

“*Typhoon in the China seas.*—Captain Uceda of the Spanish brig *Dardo*, which arrived here a few days since from Manilla, reports the occurrence of a severe typhoon in the China seas, experienced by the *Dardo* in Lat.  $14^{\circ} 00' N.$ ; and Long.  $119^{\circ} 30' East$ . The typhoon commenced on the 21st of May, from W. N. W., varied to W. then S. W. and terminated on the 24th May at S. The only injury sustained by the *Dardo* was the loss of her top-gallant masts, but it is feared that vessels in the China seas may have suffered severely from the effects of the typhoon.”—*Singapore Free Press, July 27, 1845.*

## TRACKS H. and I.

*North Pacific Ocean and China Sea Typhoon of October 1845.*

I am indebted for the data of this track to Rear Admiral Parker, by whose order several logs and a sketch chart were transmitted to me through Mr. Elliott, Master of *H. M. S. Agincourt*, and to Capt. H. Gribble, late of *H. C. S. Repulse*, who also sent me several brief abstracts ; I have placed together the logs of these two tracks, because it is quite probable that the two Cyclones were connected, though we have no direct evidence of the fact. *H. M. S. V. Driver*, bound to New Zealand, met with a Cyclone on the 6th Oct. in the Pacific Ocean, in Long.  $127^{\circ} 30'$  east, and the *John O'Gaunt*, the first of the vessels which suffered from it in the China Sea, had it commencing on the 8th in about the same latitude, but in  $116^{\circ} 40'$  East. This gives a distance of about 650 miles to be traversed in two days, which will allow a nearly average rate of 13.5 miles per hour.

As before noted I have no intermediate notices to connect these two, except one from the *Friend of China* of the 31st Dec., of the loss of the Bremen Brig *Express* from Mazatlan to China with treasure, on the Bashees, on the 8th October, of which the following is also a newspaper notice from Singapore. The circumstance that the *Driver's* Cyclone, Track H. was travelling to the northward of west, while that of the *Ann Espiegle* and other ships is to the southward of west, I do not consider as material, for I have no sort of doubt that a Cyclone might be deflected by the lofty mountains on the north of Luconia and curve away to the southward after it had passed them, if it met then for instance, with a strong N. E. breeze or other conditions altering its course.

“*Manila.—The Amigo del Pais, December 14th, 1845, contains an official notice of the loss of a foreign vessel on the coast. The communication states that on the 9th November was reported by the Mauanian, the loss of the Bremen brig Express, 460 tons, which went on shore during a gale of wind and became a total wreck. There were on board Captain Henry Hackfield and ten men including the supercargo, Mr. Edward Vischer. The cargo consisted of Sapanwood, Gold, Sycee Silver and dollars, valued at \$80,000. The gale commenced on the morning of the 8th November, and continued until 2 P. M. of the 10th. By the timely assistance of the people at San Carlos, the whole of the cargo was saved. Her Britannic Majesty's frigate Samarang received the whole of the cargo on board and was to convey it to Manila.*”—*Ibid.*

*Abridged Log of H. M. S. V. DRIVER.—Civil Time.*

Noon 6th Oct, 1845, in Lat.  $18^{\circ} 24' N.$ ; Long.  $127^{\circ} 30'$ . Steering to the E. b. S. with a fresh breeze (5)\* from the E. N. E.; Bar. 29.80; P. M. a heavy swell from the eastward, blue sky, cloudy and squally; 6 P. M. Bar. 29.75; at midnight wind N. E. (10) blowing a gale, vessel steaming to the E. S. E.

7th October.—A. M. Steamer hove too with head to the eastward.† Wind N. E. (12) 2 A. M. hurricane; Bar. 29.30; at 5 wind east (11) Bar. 29.25; at 9 S. E. Noon wind S. E. (11) Lat.  $17^{\circ} 22' N.$ ; Long.  $127^{\circ} 24'$  East; Bar. 29.50. Heavy sea running throughout; 4 P. M. to midnight S. E. (10 to 9).

8th October.—A. M. to noon wind S. E. (8) and a heavy sea; noon the same; Lat.  $18^{\circ} 18' N.$ ; Long.  $126^{\circ} 19'$  East. At night moderate and fine; Barometer 29.90.

*Extract from the Log of the Ship JOHN O'GAUNT—reduced to Civil Time.*

7th October, 1845.—Noon in Lat.  $18^{\circ} 40'$ ; Long.  $116^{\circ} 15'$  East; Bar. 29.65; wind E. N. E. and steady; at 11 P. M. wind N. N. East, heavy squalls.

8th October.—5. A. M. heavy gale, north. 10 A. M. the same, N. N. W. and tremendous sea; noon, Lat. D. R.  $19^{\circ} 3'$ ; Long.  $117^{\circ} 8'$ ; Bar. not quoted. P. M. hove too; wind N. N. W.

9th Oct.—A. M. Bar. 29.00. 5 A. M. wind west; head N. N. W.; Bar. falling; no position given. 1 P. M. wind shifted to southward and eastward, blowing with extreme violence; midnight gale unabated; Bar. 27.50, Simpiesometer 27.70.

10th October.—Noon heavy gale at E. S. E.; Barometer rising; Lat.  $20^{\circ} 53' N.$ ; Long.  $116^{\circ} 15'$  east.

*Extract from the Log of the Ship SIR ROBERT SALE. Civil Time.*

8th October, 1845.—At noon Lat.  $14^{\circ} 06' N.$ ; Long.  $114^{\circ} 15'$  east. P. M. wind N. W.

9th Oct.—Wind N. westerly and variable; Bar. noon 29.55; Lat. D. R.  $15^{\circ} 10' N.$ ; Long.  $116^{\circ} 06'$ ; P. M. shortened sail to close-reefed topsails. To 4 wind N. N. W. cloudy, gusty weather, with a heavy northerly swell; 5 P. M. west; 8 P. M. W. S. W.; 10 S. W.; midnight S. S. W.; 8 N. E. swell and a heavy westerly swell getting up; lightning to the S. E. and north.

\* These figures in the logs of H. M. Ships denote the force of the wind as marked according to Admiral Beaufort's table; 12, signifying a hurricane; I have added also the usual words.

† The wrong tack, being on the *right* hand side of the track of the Cyclone, the starboard tack should have been chosen.

10th Oct.—At 3 A. M. wind south, increasing to a strong gale with heavy squalls and rain. Noon, Lat.  $17^{\circ} 12' N.$ ; Long.  $117^{\circ} 58'$  east; Current S.  $39^{\circ}$ ; E.  $172'$ ;\* P. M. wind S. b. E. moderating; fresh and fine weather at midnight, with the wind S. E. and E. S. E. on the 11th, when the Lat. is supposed by Capt. Gribble to be about  $18^{\circ} 30' N.$

*Extract from the Log of the American Steam Barque EDITH. Civil Time.*

8th Oct. 1845.—6 P. M. off Pedra Branca.

9th Oct.—1 A. M. wind N. b. E., brisk gale. At 5 N. E. hard gale, laid too, head N. N. W.; P. M. N. E.

10th Oct.—Wind N. E., strong gale; 5 P. M. wind east; 9 P. M. moderate at S. E.; off the Ass's Ears. Minimum of Barometer  $29^{\circ} 65'$ . Drifted from Pedra Branca to the Asses Ears (drift of  $2\frac{1}{4}$  per hour.)

*H. M. S. AGINCOURT at Hong Kong. Civil Time.*

On 9th Oct. 1845.—Steady breeze (5) from the north and east with squalls.

10th Oct.—Wind north to noon, when force (8). At 4.30 P. M. Bar. falling to 29.76; struck lower yards and topmasts; wind N. b. E. At 6 wind E. b. N. Bar. 29.79;  $5\frac{1}{2}$  P. M. let go best bower and veered to 80 fs. on the small bower. To midnight wind E. b. N. Bar. 29.79.

11th Oct.—Barometer rising to 29.90; at noon 2 A. M. a very heavy squall with rain, wind east (8); 10 A. M. wind S. E. b. E. (7); P. M. weather becoming fine.

*Abridged Log of H. M. Brig ESPIEGLE.*

9th October 1845.—6.50 A. M. weighed and stood out of the Lema Channel; heavy sea from S. E.; wind N. N. E. (9). Bar. 29.87; Ther. 82. Noon. The Ninepin bearing West. Great Lema S. S. W. P. M. Increasing sea and Bar. falling from 29.85 at noon to 29.70; at midnight making all preparations for bad weather. Wind N. E. b N. (10.)

10th Oct.—Hove too throughout with head to the Eastward. Wind N. E. (10 and 11.) At 10 A. M. taken aback in a shift of wind from S. S. W., but wind flying back to East† again, Bar. falling from 29.71 at 3 P. M. to 29.66 at noon; Lat. D. R.  $21^{\circ} 46' N.$ ; Long.  $114^{\circ} 35'$ ; P. M. soundings 32 per fm. mud. Wind E. S. E. (11) 4 P. M. East (10) to 9 P. M., when S. S. E. (11) Midnight 36 fm. mud and sand.

\* No doubt from the last observation on the 8th, this is  $86'$  per day, or 3.3 miles per hour!

† This temporary shift from S. S. W. we can only account for by considering it as a local tornado within the main Cyclone, since the wind came back again steadily to the east, and is evidently part of the other ship's storm. H. M. B. being hove too on the wrong tack (for she was on the right hand side of the track, and should have been on the starboard tack,) was also the cause of her being taken aback. With her head to the Northward the S. S. W. shift would have been a quartering breeze.

11th Oct.—A. M. wind S. E. (11) Bar. 29.68; rising to 29.72 at 6 A. M. and 29.83 at noon, when wind about S. E. b S.; (9.) Lat.  $21^{\circ} 11'$ ; Long.  $113^{\circ} 30'$ ; current since 4 P. M. on 9th S.  $44^{\circ}$  W. 41 miles. Mainmast was found sprung; P. M. becoming gradually fine.

*Extract from the Log of the Ship ANN, of London, Capt. STEVENSON.  
Civil Time.*

On the 8th Oct. 1845 the *Ann* was in Lat.  $19^{\circ} 46' N.$ ; Long.  $114^{\circ} 36'$  East; moderate and fine, wind N. Easterly.

9th Oct.—A. M. light breezes increasing to strong breezes at noon, when cloudy and a heavy head sea. Wind N. N. W. Lat.  $19^{\circ} 24'$  North; Long.  $115^{\circ} 30'$  E.; 1 P. M. perceived a peculiar appearance of the atmosphere. The Barometers as usual, 30.00, and 29.80; had sent down small sails, &c. in preparation to beat to the eastward but not apprehending bad weather. Sunset increasing wind; appearance of atmosphere more settled and Barometer steady; at 10h. 30. Bars. fell two-tenths; ship standing to the E. N. E. under snug sail at 8 P. M. but gale increasing considerably reduced ship at midnight to storm sail.

10th Oct.—A. M. Barometers falling rapidly, 29.30 and 29.50. At daylight increasing to a Typhoon. Split and cut away main topsail, being unable to furl it. Ship under storm mizen. Noon Barometer 29.00 and 29.20; 1 P. M. 28.80 and 29.00. Under bare poles with a tarpaulin in the mizen rigging; 4 P. M. Bar. 28.50 and 28.70; gusts of wind and confused sea—fearful; 4.30 P. M. cut away quarter boats. At 5 P. M. Bar. 28.50 and 28.80, with an alarming appearance, ship lying with tarpaulins in mizen rigging with her head to the Eastward and drifting fast to the Southward.\* At 5.30 tremendous gusts with perfect sheets of foam all round, the spray sweeping over the mast-heads. The heavy seas that struck the ship and which we expected would make a clean sweep of the upper deck fore and aft disappeared over our heads like a sheet of lightning from the fury of the wind. At 7 Bar. 28.00 and 28.20; heavy rain. About 8 P. M. Typhoon moderating, sea in a more confused state. Ship labouring dreadfully; at 9 P. M. Typhoon fell suddenly light, and veered† to the S. Eastward; head from S. W. to W. S. W. rolling awfully, but Bar. still inclined to fall; did not venture to make sail. At 10.30 wind increasing from the S. E.; at 11h.20 every appearance of an approaching hurricane from the S. Eastward. During the lapse of 50 minutes the Bars. fell 0.3, and were now at 27.70 and 27.80. Midnight, Typhoon blowing with awful fury and the sea fearful in the extreme, washing away every thing before it. Fore topmast, jibboom and head of the foremast gone, which was not discovered till daylight.

\* The direction of the wind is not given, but from this it must have been about N. N. E.

† The Italics are mine; it might almost be called a *shift*.

11th October.—Daylight strong gale S. E. ; at 8 P. M. the same and less sea. Bar. 29.30 and 29.10, rising rapidly ; Noon, Lat. 20° 41' N. ; Long, 114° 30' East. After which fine weather gradually returning with Southerly winds.

The following notice from a Singapore paper does not afford us any assistance in tracing the Cyclone track, but it is always a lesson (if more are needed) to shew the mischief which is done by disregard or ignorance of the laws of our science. I have no sort of doubt that it was a part of the same Cyclone to which the preceding logs relate.

“The ship *Tyrer*, Ellis, which left China on the 9th October 1845, with a cargo of Tea, bound for London, arrived here on the 15th November, having experienced a very heavy Typhoon on the passage. We have received the following particulars of the voyage. The *Tyrer* left on the 9th ult. with pleasant weather. On the 10th at 4 P. M. commenced with small rain and wind increasing,—continued to blow very hard until 10 o'clock next morning when it blew a perfect hurricane, and the ship refusing to steer any longer broached to. During eight hours the ship was on her beam-ends, and blew away her jib booms, jib, fore royal-masts, two quarter boats, washed away all the bulwarks,—and a great quantity of sails, water casks, &c. went overboard :—every thing was cleared to cut away the masts in case the ship went any lower. When the ship at last righted she had three feet and a half of water in her hold. From 10 A. M., on the 11th until 8 P. M., the wind was from N. N. E. to N. W. The day after this severe storm four of the crew were seized with fever and ague—the next day 13 more were down, and ultimately for three weeks there were only five persons left in a condition to work the ship, viz., the Captain, two mates, the cook and the steward. We think great credit is due to Captain Ellis for the manner in which he brought his ship down under these circumstances. It is supposed that about one-third of the cargo has been damaged.”

#### REMARKS.

#### TRACK H.

I begin here, as previously explained, with the Cyclone of *H. M. Steamer Driver*, which vessel seems to have had it on an average from N. E. to S. E. and to have been at 5 A. M. when nearest the centre, not far from her position at noon on the 7th, being hove too during most of the interval. With the best allowance I can make for her drift, not having the detailed log to refer to, I should allow for this Cyclone a track to the W. b. N. as I have marked it ; I do not connect the two tracks, as we have no authority for so doing.

## TRACK I.

The *John O'Gaunt* appears to have had the Cyclone commencing with her from North soon after midnight of the 7th, and by noon of the 8th, in Lat.  $19^{\circ} 3'$ ; Long.  $117^{\circ} 8' E.$ , it was a heavy gale at N. N. W. which would place the centre to the E. N. E. of that position and at a considerable distance, or moving down slowly, for the wind remained apparently at this point till 5 A. M. on the 9th, or for nearly 17 hours, when it is marked at west, the centre not being far to the northward, for at 1 P. M. it is said the wind *shifted*\* to the south, and by the following day, the 10th, it had veered to E. S. E. when the Barometer was rising, so that the vessel was apparently drifted far to the northward and the Cyclone was passing her slowly without much southing in its track. But the notes obtained are unfortunately very meagre, as the logs probably were, and in the absence of the log we can deduce little but estimates. The two notes I have of this vessels log also disagree, so far as can be made out, in dates, which adds greatly to the difficulty.

The *John O'Gaunt* is the only vessel from which we can fix the bearing of the centre of the Cyclone approximately on the 8th, and on the 9th she was very near the *Ann*, with which vessel it did not commence till the afternoon or rather night, though it was certainly *seen* approaching her soon after noon, by the "*peculiar appearance*"† noted in the log. It is evident from the position of these ships that the Cyclone was not one of any great extent, for they were at most, and with every allowance for errors, not more than 100 miles apart on the 9th, when the *John O'Gaunt* was close to the centre, having the shift at 1 P. M., while the *Ann* was just remarking the peculiar appearance quoted above.

Hence we cannot include the gale experienced by H. M. Brig *Espiegle* and the *Edith* on the coast, and by H. M. S. *Agincourt* at Hong

\* These words *shifted* and *veered* are used so indiscriminately that we can deduce nothing exact from them, unless we are told from which point the shift took place. If it was at once a shift from West at 5 A. M. to South at 1 P. M., this would indicate a very slow motion of the Cyclone, or that the ship was carried along with the storm wave to the Westward faster than she drifted to the Eastward. All we can conclude is that from 5 A. M. to 1 P. M. she was very close upon the centre.

† It is to be regretted this peculiar appearance is not more accurately detailed. One of the greatest services seamen can render to science and to each other is to give exact and full accounts of all these phænomena.



Kong, as parts of the same Cyclone, the *Espiegle* being at 260 miles distance from the *John O'Gaunt* to the N. N. W., and the *Sir Robert Sale* 240 miles to the S. S. W., and thus far out of the utmost verge we can suppose for the outer storm circles. The fact of these gales occurring at the same time, and the direction of the wind with the *Espiegle*, being in accordance with the circle, would at first sight have led us to suppose that they really formed part of it, but the *Ann's* log, which appears from the extract made to have been perfectly well kept, is conclusive on this point. The easterly gale of the *Espiegle*, though veering from N. E. to S. East or through 8 points of the wind circle, we may consider to have been either the first efforts of the N. E. trade or that this and the *Sir Robert Sale's* cloudy and threatening weather on the 9th were parts of a Cyclone of larger diameter, which was not completely formed, its central part only being, as we have seen, with the *John O'Gaunt* and *Ann* in full action, and with the last vessel, of excessive violence, with a very remarkable fall of the Barometer at and near the centre. I should remark also, by the way, that we have as yet no instance of the Cyclones of the China sea extending to 600 miles in diameter, and this is certainly not one.

I have then laid down the track from the logs of the *John o' Gaunt* and *Ann* alone as being one *about* from the East  $\frac{3}{4}$  North to the W.  $\frac{3}{4}$  S. It may be somewhat more or less of course, the exact position of both vessels being uncertain, but this is probably nearest the truth.\*

#### TRACK I.

##### *Manila Typhoon of November, 1845.*

I have no further notice of this cyclone than the following, from the *Singapore Free Press* :—

“ By the *Caroline* from Manila accounts are received from the Manila papers of a severe gale there. It grew dark on Monday the 2d November,† 1845, with very dark murky weather and a fresh breeze from N. E. changing to N. N. E., East and S. E. at which it rested at 3 in the morning. The force of the tempest was from 10 o'clock on the 3d. The bar. fell 75 centesimals. Almost all the ships in the Bay dragged; the American ship *Camera*, which left on the 2d re-

\* In the Chart to the Sailor's Horn Book, this track has a more Southern direction, being to the S. W. b. W. from the N. E. b. E. owing I think to oversight in the dates when laying it down for that chart without any Memoir.

† Supposed Manila time, or 1st Nov. European.

turned on the 3d before having left the Bay, with loss of her three masts; *Balcarras* and *Flecha* cleared out on the 2d. They arrived safely at Singapore."

If we take the shift here to have been from N. N. E. to S. E. this will give us a track of from the E. b. N. to the W. b. S., or it perhaps curved a little more to the southward on its passage, as the entrance to that large Bay would lead it to do, but it might thus become outside a Cyclone travelling from N. E. or N. E. b. E. If we could obtain well authenticated registers of winds in such positions both within and at the bottom of deep bays and gulfs over which Cyclones are travelling, and then accounts of their tracks outside, we should be able to speak of these changes of tracks with more certainty. On shore, valleys and ravines seem certainly, as it were, to lead whirlwinds to prefer the lines of their direction.

1846.

TRACK J.

*Typhoon of the H. C. Steamer PLUTO, June, 1846.*

This Steamer was bound from Hong Kong to join Rear Admiral Parker's force at Labuan, on the coast of Borneo, when she ran into the Cyclone, in which, as will be seen, she was so nearly foundering. Her log was forwarded to me by the Superintendent H. C. Marine at Calcutta, and I have obtained also some other documents enabling me to trace accurately the track of the Cyclone, and to demonstrate very clearly the grievous error which had been committed. I deemed it right to address the Government of India through the Superintendent, pointing out this error, and it has done me the honour to lithograph my letter and chart for the instruction of the officers of the Indian sea-going Steam service. The lesson it affords may be useful in other parts, and as my letter comprises at once the abridged details of the data, and the summary of them, I have preferred printing it nearly at length. The sketch chart on which I have also marked the run of the schooner *Mischief*, the log of which vessel I give at the end, will be seen on the large chart to this memoir. The following is my letter:—

*The Secretary to the Superintendent of Marine, Calcutta.*

SIR,—I have the honor to acknowledge receipt of your letter No. 3805 of 18th inst. giving cover to the log of the H. C. Steamer *Pluto* in the typhoon experienced by her in the China Sea in June 1846.

It is at all times an invidious task to expose professional errors, but it is one essential to the interests of science, of humanity, and of the public service, when these involve not only great and useless pecuniary loss, but imminent risk of life and property, and possibly great detriment, amounting even to partial failure, of warlike operations. Such errors are moreover by so much the more mischievous when they are committed in the face of knowledge now within every seaman's reach, and in a quarter of the globe where, so to speak, the storms have been tracked with mathematical accuracy through a long series of years from 1780 down to the present time.\* The very newspapers in China refer at once to the Law of Storms to explain their tyfoons whenever they occur!

But I deem it my duty, Sir, to point out, what cannot have escaped you, that the H. C. Steamer *Pluto* on this occasion steamed as wilfully into the heart of a Tyfoon as if she had been sent out to experiment upon them; and that heaving to for six hours, or making a curve in her course not amounting to 100 miles of direct loss on her track, would have fully and completely saved her and the Government from all the loss and danger she has suffered, and left her services available with the Admiral.

I proceed to shew for the information of Government, by whom I trust this letter may be forwarded to the Admiral, how this has been done.

My documents are:—

a. Log of the *Pluto* as forwarded by you, which is however imperfect, for it is a copy of the remarks mostly; the courses and distances steamed and the winds, being omitted! (the detailed log was however subsequently forwarded by Admiral Parker.)

b. Private log of the chief officer of that ship forwarded to me by Capt. Johnson.

c. The Newspaper accounts from China, giving imperfect logs of the Brig *Siewa*, and of the *Nemesis* and *Pluto* Steamers with reference to that of the *Jane*.

d. The log of the Brig *Anonyma* obtained here by myself.

1. It appears that the *Pluto* left Hong Kong on the morning of the 27th June, and at noon on the 28th was (at A on the annexed Chart)† in Lat.  $19^{\circ} 49' N.$ ; Long.  $113^{\circ} 45' East$ . Her Barometer, which was at noon 30.00, had fallen by 6 M. P. to 29.90, and by midnight to 29.68, that is, it fell one-tenth in six hours from noon, and something more than two-tenths more in the next six hours; and this was in the China Sea, in the tyfoon months, with the wind from the Eastward, or *against* the usual monsoon, and with as much of other appearances as rendered it quite a sufficient warning.

\* See "Storms of the China Sea from 1780 to 1841," by me. (Journal Asiatic Society, vol. xi.)

† See Chart to the present Memoir, on which, to the left, this sketch chart is placed.

June 29th.—The vessel appears to have steamed on as if wholly unconscious of any danger ahead, though the increasing gale must have warned them of it, if they did not believe their Barometer; and a reference to the Horn Book of Storms\* (p. 10 and 16 of the first, and 10 and 16 of the 2d edition) must have demonstrated to them beyond controversy that they were on the Northern side of the track of a typhoon and steaming as directly as they could for its awfully dangerous centre! or in other words, placing themselves wantonly in a position in which the finest frigate in the navy may be blown over like a paper boat: and from which hundreds of well found ships have never escaped to tell their tale! and they were doing this with a deeply laden and encumbered vessel!

By half past noon she *had* steamed into the centre of the typhoon, being at noon in latitude  $18^{\circ} 22'$  N.; Long.  $112^{\circ} 48'$  East; or at B on the chart. Her course made good was S. 32 W. 103 miles since noon of the 28th; her track is made curved on the chart to shew how she probably steamed and drifted.

It will be observed that between the first noted fall of the Barometer at 6 P. M. and this time Noon 29th, eighteen hours elapsed, and as during the last six hours she could have made but little way, we may fairly allow her to have run down at the rate of five miles per hour (or 90 miles of the 103) which she made between Noon of the 28th and 6 A. M. of the 29th; and that for the last 60 miles of this 90, or from *a.* (her position at 6 P. M.) to *b.* which we may estimate to be that of 6 A. M. we may fairly say she was forcing herself into mischief. The distance from *a.* to B also, or 70 miles, must be about the semi-diameter of the Typhoon where violent. The sequel of this mistake, which might have been detailed and predicted beforehand, even if we had not another word from her, was the shift of wind to the S. W. and the remaining half of the Typhoon which so nearly completed the *Pluto's* destruction.†

The *Siewa* was on the 28th, at Noon, in Lat.  $17^{\circ} 21'$  N.; Long.  $113^{\circ} 38'$  East; with a commencement of bad weather, increasing till the next day (wind not stated) when at Noon 29th she was in a full hurricane in Lat.  $18^{\circ} 8'$  N.;  $112^{\circ} 32'$  East; throwing cargo overboard, having thus committed on the opposite side of the storm the same error as the *Pluto*; i. e. ran up 78 miles to the N.  $53^{\circ}$  W. into the heart of it, for at 3 P. M. she was in the calm centre with a shift of wind to N. W. veering to the South West at midnight, when it began to moderate as the typhoon was travelling from her. Her track is marked on the chart.

The *Nemesis* from Bombay is said to have been farther to the South, in  $16^{\circ}$  N. and to have first experienced the Typhoon at 2 P. M. on the 28th, from the N. W., veering gradually to S. S. E. Her position is not given.

\* If they had it on board?

† She lost her funnel, rudder, &c. &c. and drifting back in an utterly disabled state, struck on the rocks of Hong Kong, where she was nearly lost.

The *Anonyma* on the 28th and 29th was running up to the N. E. b. N. and N. N. E.  $\frac{1}{4}$  E. from  $14^{\circ} 40' N.$   $113^{\circ} 15' E.$  to  $18^{\circ} 4' N.$   $114^{\circ} 57' E.$ , with a strong S. W. monsoon and gale, which latterly veered to the S. E. and S. S. E. with a heavy confused sea. I have marked part of her track, also showing that she ran up just across the track, and *behind* the storm which was tearing the *Pluto* to pieces.

The track of this Tyfoon appears to have been about from the S.  $30^{\circ}$  E. to the N.  $30^{\circ}$  W.

It is only necessary, Sir, to refer to the sketch chart annexed, to see in a moment, that, allowing the Commander of the *Pluto* to have acted from the praiseworthy motive of pushing on at all risks to join the Borneo force at the earliest moment, he took exactly *the only wrong method* to do so! Assuming that at midnight 28th, or 2 A. M. on the 29th, when he could not have doubted that he was plunging into a Tyfoon, he had steamed away to the N. E. or within a point or two either way of it as might have been easiest for his vessel and engines, till his barometer rose again to 29.80 or 85, which is a safe altitude (and the Barometer will mark the distance made from the centre of the Tyfoons almost with the accuracy of a clock) and then have hauled gradually to the East, S. E., South and S. S. W., till on his direct course, he would have made about the dotted line on the chart, and not even have crossed the track of the centre for a long time, escaping thus the inconvenience of the heavy sea always found there.

I am enabled to set this error in the strong light of contrast, by adverting to a report which, under a general order from the Lords of H. M. Admiralty, has been sent to me by Commander Nevill of H. M. S. *Serpent*.

This vessel, with  $2\frac{1}{2}$  millions of Dollars on board, being the last instalment of the China treaty money, encountered off the Mauritius in February last all the signs of wind, weather and Barometer indicating her approach to a hurricane. *She hove to, for six hours and allowed it to pass her*, and then, as I have indicated,\* when she bore up, crossed the sea left by the path of the centre, which was so heavy that every precaution was necessary to prevent her rolling away her masts; but she lost nothing but the six hours run.

The difference between these two vessels is evidently, and in a word, that of management and mismanagement. Both were on important services (and the steamer had moreover the advantage of going in the direction she pleased) but the one accomplished her's in safety by due attention to the law of storms, and the other is crippled by setting it at defiance. I repeat that this may have been done from the most praiseworthy motives, but it has been altogether done the wrong way, and if, without being especially called upon, I step forward to expose the error, it is because I consider every Englishman and every sailor bound to point out errors of judgment which, however remotely, may in some cases seri-

\* Horn Book of Storms, p. 9.

ously affect life and property, and the safety and honour of our flag; and that I should ill return the assistance which I have received from the Honourable The Court of Directors in furnishing me with documents for my researches, did I pass over this most grave error in silence.

H. PIDDINGTON.

Calcutta, 7th Oct. 1846.

*Extract from the Log of the Schooner MISCHIEF, Capt. WHITE, from Hong Kong and Singapore, subsequently obtained. Civil Time.*

26th June.—Left Hong Kong, Noon, Lat.  $21^{\circ} 40'$  N.; Long.  $21^{\circ} 40'$ . Bar. 29.42.

27th June.—Lat.  $19^{\circ} 16\frac{1}{2}'$  N.; Long.  $112^{\circ} 5\frac{1}{2}'$  East; Bar. 29.40. Ther.  $92^{\circ}$ . Squalls from S. to S. E. and a heavy swell from the South; 8 P. M. brisk gale S. E. Noon strong S. E. gale, a very heavy Southerly swell; unable to carry sail for it.

28th June.—Lat.  $17^{\circ} 39'$  N.; Long.  $110^{\circ} 16'$  East; S. East breezes abating and sail gradually made.

It will be seen on the chart that the *Mischief* crossed the line of the Cyclone's track about 36 hours previous to its arriving at her position, but that she distinctly felt the swell which the Cyclone was driving up before it.

#### TRACK K.

*Typhoon of the Ship HYDEREE, Capt. POWELL, 21st and 22d July, 1846.*

The *Hyderce* at sunset 21st of July, 1846, had the Grand Ladrone bearing N. b. W. distant 15 miles, in 17 fs. water, standing to the E. S. E. with the wind at N. E. increasing to a hard gale and very heavy high sea. Bar. 29.50; midnight 29.30.

22nd July.—At 2 A. M. Bar. 29.20; 4 A. M. 29.00; hard gale at east at 6 A. M.; daylight the wind fell light, Bar. 28.90, and some sail was made to keep the vessel from rolling. At 8 A. M. the wind was South but Bar. rising; at 9 S. E.; by 10 a heavy typhoon at S. E. ship on her beam ends; cut away the mizenmast and foretopmast, lost foremast head, cut away main topmast; decks being swept fore and aft; at 11 moderating; 3 feet water in the hold; Noon moderate but a heavy sea. The Barometer at sunset on the 21st July was 29.50; at midnight 29.30; 2 A. M. 29.20; 4 A. M. 29.00; daylight 28.90; after which it began to rise. The ship's position at sunset, when the gale commenced, was with the Grand Ladrone bearing N. b. W. distant 7.5 miles, in 17 fs. water. After this stood to the E. S. E. till the wind shifted at 10 A. M. and when the gale was over, had soundings 22 fs, Cow-cock Island bearing north, about 40 miles to

the westward of Grand Ladrone, where the ship remained three days refitting, the current setting W. S. W. the whole time, about two knots per hour.

It would appear that this Cyclone was a very partial one, for as I am informed by Captain Powell, ships at a short distance to the northward of the *Hyderee* had topgallant sails set. Nevertheless it is worth noting as being perhaps analogous to, if not of the same kind, as the Tornado Cyclones off the Coast of Ceylon, and near Cape Negrais,\* which are peculiarly dangerous on account of the little warning they afford, and their tendency to appear in fine weather, when ships are least on their guard against them. We have recently had an instance of their occurrence at the Sandheads, occasioning the loss of the *Barque Nussur*, with all hands on board.

The average shift being from East to S. E. would give a track to the W. N. W. from the E. S. E., but as we must make some allowance for the ship's drift to the southward during the first part of the Cyclone, I have allowed it one to the E. b. N.  $\frac{1}{2}$  N. which will not be far from a correct estimation.

#### TRACK J.

H. M. S. RINGDOVE, *Straits of Formosa*, Sept. 1846.

I have marked this as a Cyclone, H. M. S. *Ringdove* having had a severe gale on the 15th and 16th Sept. (force of the wind being marked as high as 10 and 11.12, being hurricane force) from the North, which after an hour's calm again returned at S. W., but in this last half both its duration and force were far less than in the first part, in which it was blowing for 27 hours from N. E. to North, with a force of from 8 to 11, falling a dead calm from force 10, whereas in the latter half of the Cyclone it was blowing only from force 4 to 8, and this for about 12 hours at most. This is partly accounted for by her bearing up and running to the North and N. E., which was directly out of the vortex, and partly no doubt from the influence of the coast of China, close to which she was. Nevertheless, these apparent anomalies or peculiarities, should be faithfully noted to aid us in future research.

#### *Abridged Log H. M. S. RINGDOVE.*

At Noon 14th Sept. 1846. Lat. 24° 0' N.; Long. 119° 45'; wind N. E. force (5); veering to North at 7 P. M. and from that time to midnight varying

\* Sailor's Horn Book, p. 38, Journal Asiatic Society, Vols. IX. and XIV.

from North to N. E.; and increasing in force to 9., or strong gale for a man-of-war; thick squally weather.

15th Sept.—Wind N. E. 8; at 6 A. M. North 9, and at Noon the same and 10. Lat.  $24^{\circ} 8'$  North; Long. by bearings of Chapel Island,  $118^{\circ} 35'$  E.; Bar. 30.10; 5 P. M. 29.80. Midnight 29.80; wind to midnight North; 10, ship's head to the Eastward, squally, cloudy, and rain.

16th Sept.—Wind N. b. E. 10, to 4 A. M. when it fell calm to 5 P. M. Breeze springing up S. W. misty and drizzling, which continued to Noon, when it was still S. W. 7, having been at 8 from 8 A. M.; Bar. 5 A. M. 29.63. At Noon 29.84; Position when in the calm and shift about  $23^{\circ} 42'$ ; Long. 118.55 East; P. M. wind S. b. E. force 7; weather still overcast and cloudy, but subsequently clearing up.

The shift of wind was from N. b. E. to S. W., which would give a track of from E. S. E. to the W. N. W. but with due allowance for the vessel's standing to the Westward, and drifting as she must have done to the Southward, we shall find that the average track would be about from the S. E. to the N. W., at which I have marked it. We do not know in truth, also, how much the track may have been influenced by the land, but for all practical purposes the estimated track will be quite near enough to the truth: for the essential question for the seaman in all narrow seas is to know if the tracks of the Cyclones lie across or directly through the channels.

#### TRACK M.

*H. M. S. AGINCOURT, Bashee Passage, September, 1846.*

I am also indebted for this log to Mr. Elliott, Master of *H. M. S. Agincourt*, who forwarded with it a sketch chart shewing very clearly that a Cyclone must have passed over or near to the south extreme of Formosa, of which the *Agincourt* had the southern quadrants only, while *H. M. S. Vestal* and *Dædalus*, which vessels parted company in the forenoon, and stood to the northward, had it much more severe. Their logs unfortunately have not reached me.\*

\* Probably under a notion prevalent among some Commanders that, unless a Cyclone amounts to a furious or damaging hurricane or typhoon, it is of no consequence, or useless to send us the details. This is a great mistake. Whenever there is anything *Cyclonic* in a breeze, I shall be glad to have details of it, and especially when other vessels have also felt it. A moderate Cyclone may be as instructive as the most violent one for the great object of tracing out the track at that season of the year.



*Abridged note from Mr. ELLIOTT'S letter, and the Log of H. M. S.*

AGINCOURT.

H. M. S. *Agincourt* was on the 14th Sept. 1846, in sight of Formosa, Ape's Hill bearing N. N. E. 100 miles; at 8 A. M. wind hauling from East to North and N. N. E. with fine weather and royals set; Bar. at 1 P. M. 29.86; at 5. P. M. the wind shifted to N. W. in a squall with rain; after which the weather became squally; at 6.30 P. M. calm, and at midnight a moderate breeze from the N. W. b. N. with a heavy confused swell from the E. N. E. but fine, and wind moderate, being marked as 5.

15th Sept.—A. M. swell continuing, Bar. had fallen to 29.83; made preparations for bad weather. At 6 A. M. gale commenced wind N. W.; at 7 it was W. N. W.; at noon, W. b. N., Bar. 29.48, ship having been standing to the Southward. At 2.30 P. M. S. W.;\* at 6 P. M. S. S. W. and at 7 P. M. South; Lat. at Noon was  $21^{\circ} 18'$  and Long.  $121^{\circ} 20'$  East; Bar at 9 A. M. 29.50 and at Noon 29.46; Ther.  $83^{\circ}$  at 1.30 P. M.; at 3.30 bore up, Bar. 29.63, and by 6 P. M. the Barometer was at 29.70; the North Bashee being in sight bearing S. W. 5 miles.

Mr. Elliott remarks that the E. N. E. swell was so heavy that it would not have been proper to run out against it. His sketch makes the track of the Cyclone to be from the E. N. E. to the W. S. W., in which I quite agree.

TRACK N.

*The MISCHIEF'S Tyfoon of Sept. 1846.*

*Abridged Log of the Clipper Schooner MISCHIEF, Capt. WHITE, from Singapore to China. Civil Time.*

The *Mischief* was on the 23rd Sept. in Lat.  $17^{\circ} 4' N.$ ; Long.  $115^{\circ} 26'$ ; Bar. at 29.46; † Ther. 86; P. M. brisk Westerly breezes and threatening appearance to the West and N. W.; 3 P. M. wind hauled to the N. W., at night W. N. W. and N. W. and squally weather.

24th Sept.—Increasing; 2 to 4 A. M. much lightning N. E. to N. W.; 4, threatening appearance to the N. E. and N. W. Making preparations for bad weather; sharp squalls W. N. W. and N. W. Very wild upper sky, but Barometer steady at 29.94; at 10h.30 P. M. Ther. 84; heavy N. E. swell getting up from 11 last night, which continues; Noon blowing hard from N. W. with constant rain and squalls; Lat.  $13^{\circ} 54' N.$ ; Long.  $115^{\circ} 34'$  East; a current to the E. S. E. of

\* Mr. Elliott remarks, "At this time the Bar. rose 0.02 and fell again immediately."

† Probably an error of the copyist, as it was at 29.94 on the 24th.

30 miles since the 23rd. The Pratas bearing N. E. b. N. 126 miles : P. M. furious hard squalls from W. N. W. rain and a confused sea ; hove too at 3 P. M. till daylight, blowing furiously from the West and a frightful sea.

25th Sept.—Daylight very wild appearance ; wind coming round to the W. S. W., still blowing fearfully and sea dreadfully cross from the veering of the wind ; 8 A. M. wind S. W. ; Noon a hard Tyfoon from S. W. with a dreadful sea ; no signs of its clearing up. Weather so thick cannot see  $\frac{1}{4}$  mile all round ; Lat. Acct.  $19^{\circ} 22\frac{1}{2}$  ; Long. Acct.  $116^{\circ} 27'$  ; Bar. 29.16 ; Ther.  $84^{\circ}$ . Allowed 18' E. S. E. and 11' East for current and sea ; Pratas Shoal N. b. E.  $\frac{1}{4}$  E. 80 miles ; P. M. heavy gales S. S. W. with a tremendous cross sea breaking over the vessel fore and aft ; sunset very severe gusts ; no signs of a break in the weather.

26th Sept.—Constant passing sharp squalls and torrents of rain with a breaking sea ; appearances of a second gale. Noon Lat. Acct.  $20^{\circ} 28' N.$  ; Long.  $116^{\circ} 16'$  East ; Bar. 29.22 ; Ther.  $83^{\circ}$ . Allowed 30 miles N. E. b. N. for the sea ; Pratas Shoal N. E. b. E.  $\frac{1}{4}$  East 30 miles ; P. M. furious squalls from S. W. b. S. ; constant heavy rain and high turbulent sea. At 5 P. M. very severe ; sunset S. W., 8 P. M. perfect tyfoon S. S. W. ; 9.15. wind South\* to midnight.

27th Sept. A. M. wind and weather as above ; signs of a break in the weather ; 4 A. M. blowing very hard with torrents of rain. Daylight fearfully hard with very thick rainy weather and dirty appearances all round. At 8 the same ; at 9 a lull but very dirty still ; squalls and rain till Noon ; when a bright spot or two to the North, but no signs of a change ; Lat. by Acct.  $21^{\circ} 25' N.$  ; Long.  $116^{\circ} 22\frac{1}{2}$  East ; Bar. 29.22 ; Ther. 81 ; P. M. passing sharp squalls from S. W. and the same confused sea ; 4 P. M. gale abated a little with a clear sky to the W. S. W. and Northward ; at 6 steady hard gale from S. W. b. S. with a heavy sea and far from settled appearances to the N. E. and S. E. quarters. At 8 the same winds, drizzling rain and lightning from N. W. to N. E. and East, and a high sea on. Midnight threatening appearances from N. W. to East with continued lightning.

28th Sept.—A. M. Passing heavy squalls from W. S. W. with heavy rain and appearances of the wind coming from the N. E. ; the lulls between the squalls considerable. At 9 A. M. hard gale from the Westward with cloudy weather but sea decreasing ; Noon, gale and sea much moderated ; made sail. Lat. by indifferent observation  $21^{\circ} 42' N.$  ; Long.  $115^{\circ} 34\frac{1}{2}'$  East ; Bar. 29.23. Ther. 81.

The following is extracted from the *Overland Friend of China* of Sept. 1846, and the Cyclones it relates to are doubtless one, or perhaps two of them connected with that of the *Mischief*, but I have been unable to obtain further details.

\* It is possible there may be some error of the copyist here, or some little aberration of the Cyclone track, but it does not affect the general result.

The *Apolline* from Tutacorin had severe gales about 70 miles outside the Ladrões on the 27th and 28th, but suffered no damage.

The *Stephen Lurman* put back having experienced a severe typhoon off Braco Point. It commenced on the night of the 26th and continued until the morning of the 29th. The vessel was twenty-six hours under bare poles, and was at one time within three miles of the land on a lee shore, but fortunately the danger was discovered in time to wear. There was a very high turbulent sea. She sprung her mainmast and lost some sails. During the height of the gale she had three feet water in her hold.

It is remarkable that in the storm experienced by the *Aqua Marine*\* the wind went round with the sun. In the case of the *Stephen Lurman*, it went round against the sun.

The *Amazon* encountered a severe gale which commenced on the 25th and lasted until the 28th September. She was then in between 19 and 21 degrees of N. Lat. and 116° and 117° E. Long. On the 27th the vessel was nearly under water. To ease her the mizen-mast and fore top-mast were cut away, the guns and all the deck lumber thrown overboard.

†The *Don Juan*, 28th September, at 10 P. M., lost main-mast off Amoy, the weight of the breeze lasted 12 hours, and shifted from S. S. E. to N. N. W.

*Kestrel*, from Lombok, has also been much crippled.

The H. M. T. S. *Sapphire*, reports the Admiral with part of the Squadron still at Chusan.

The H. M. Schooner *Young Hebe*, put back into Amoy, having lost two anchors in the gale of 28th and 29th ultimo.—*Overland Friend of China*.

#### REMARKS.

It would appear from this valuable note of the *Mischief's* log, which Capt. White has been good enough to render as perfect as possible for me, that the Cyclone had fairly commenced with her from the N. W. about noon of the 24th, though her Barometer was still as high as 29.94 at 10.30 A. M., but this has occurred before in the China Sea, and it even has remained high throughout the whole of a severe and undoubted Typhoon Cyclone.‡ At this time then, noon 24th, we may allow the centre of the *Mischief's* Cyclone to have been bearing N. E. of her, and at no great distance, since by daylight on the following day it

\* I shall notice this vessel's storm separately.

† *Apolline* is probably meant here, and the ships were on different sides of the track of the Cyclone.

‡ See 6th Memoir, Journal Asiatic Society, Vol. XI. p. 690, remarks on the *Ariel's* Barometer.

bore North, the wind being about West and hauling rapidly to W. S. W. and to S. W. at 8 A. M. where it continues to noon. We have it thus between noon 24th and 25th coming down upon her from the N. E. and passing her close to the Northward of her line of drift. If we take her Bar. at 10h. A. M. of the 24th to have been within the influence of the Cyclone, we find that it fell (from 29.99 to 29.16) 0.78 in the 25 hours from 10h. A. M. to noon of the 25th, or at a mean rate of 0.15 per hour, which would give a distance at the mean of the time, or say at about midnight, of 50 miles only from the centre, and this I have taken as the best datum we have, though we cannot be assured that the fall of the Barometer was at a regular rate. The succeeding rapid veering of the wind shews however, as above remarked, that the vessel *was* very close on the centre.

We next find that from noon of the 25th to that of the 26th the wind, not hauling to the W. S. W. and S. W. and then gradually to S. E., which it should have done if the Cyclone had had a track to the S. Westward so as to have brought the wind to S. E. at about noon on the 26th\*, but that after coming to S. S. W. at P. M. on the 25th, it remains at that point and to S. W. b. S. at noon on the 26th, evidently showing that the centre was now bearing to the N. W. b. W. of the vessel, and had thus, from some unknown cause, curved away to the Northward and Westward instead of continuing its straight track to the S. Westward, for the whole of the day of the 26th-27th to noon of the 28th, we find that it continues at S. W. and S. W. b. S. though abating a little, the Barometer having risen 0.06 only on the 24th; not improbably from the influence of the coast Cyclone, of which we have the newspaper notice previously quoted, for we find that the threatening appearances continue with her from N. W. (her own Cyclone) to N. E., that of the coast of China.

On the 28th, though we find "the appearances were that the wind was coming from the N. E.," i. e. that there was probably a heavy bank in that quarter, yet the *Mischief's* Cyclone ended in a hard gale from the westward, gradually moderating after noon, but the Barometer between the 27th-29th rising 0.06 only, as before. I have laid down its track as curving away and travelling off to the N. Westward

\* For we have always the vessel's position carefully given, and moreover *worked up at the time*, which is far more to be depended upon than after estimates.

without any reference to this return of the wind to the W. S. W., and I now explain why I do so.

We have seen in the log of the 27th that the appearances were threatening from N. W. to East, and to N. E. on the 28th, and at noon on this last day the *Mischief* was only 93 miles S. W. b. S. of Braco Point,\* off which the *Stephen Lurman* experienced a typhoon between the night of the 26th and morning of the 29th, "the wind going round against the sun," and the *Appolline* had severe gales about 70 miles *outside*† of the Ladrones on the 27th and 28th.

The *Amazon* again had a severe gale from 25th to 28th, and from these provokingly vague notices (which look as if the ship's position was not known) we may guess that on the 27th she was in Lat. 20° Long. 116° 30' or thereabouts, but again at what hour of the 27th she was in distress we cannot say. At noon of that day the two vessels, *Amazon* and *Mischief*, were about 85 miles apart. Hence from all this we may deduce that it is probable, as it is certainly possible, that on the 28th the *Amazon* was nearer to the centre than the *Mischief*, and that the *Stephen Lurman's* Cyclone was a different one, which was passing down the coast of China from the E. N. E. and may probably have deflected that of the *Mischief*, and occasioned the W. S. W. gale with which her Cyclone ended. This is very vague, it is true, but we have no better data, and must wait to see if future experience will allow us to suppose that the track may even have curved more shortly to the N. Westward, which, were we to take the *Mischief's* log alone, we should infer it did.

#### *The DON JUAN'S Cyclone.*

If there be no error in the newspaper notice which I have printed at p. 31, this is a very remarkable instance of a Cyclone in the Formosa Channel travelling to the E. N. E. from the W. S. W. We have unfortunately no further notices of it, but I place it on the chart both as a new fact, if it is correctly reported, and because, as will be subsequently seen, I have in track T. the *Easurain's* Cyclone, a very remarkable but

\* The proper name I suspect. By the English, (see Horsburgh) it is usually termed Breaker Point.

† If this was a Ship from Singapore she was probably not far from the Meridian of the Grand Ladrone, but she may have been to the eastward and have partaken of the *Stephen Lurman's* Cyclone.

perfectly authenticated instance of a severe Cyclone off the south end of Formosa, also curving away to the eastward, after travelling up from the southward: so that this one becomes not so improbable when we consider moreover that the land of China and that of Formosa are both high, which may influence the formation and tracks of the meteors very considerably.

1847.

TRACK P.

*Typhoon of the Brig GUESS, July, 1847.*

The following is a newspaper notice, altered from the *Singapore Free Press*, of Oct. 14th, 1847, to Civil Time.

“The following has been sent us from Amoy for publication. The *Guess* seems to have encountered a very severe gale:—

‘Extract from the brig *Guess*’s Log.—On the 19th July 1847, at noon fresh breeze and squally. Barometer falling to 29.50; at 2 double-reefed the top-sails and furled top-gallant sails. At 3 P. M. more moderate; wind N. N. W., out reefs and set top-gallant sails. At 4 P. M. strong breeze and a dirty appearance, in top-gallant sails and double reefed the top-sails. At 6 P. M. strong gale, squally, and looking bad, wind N. b. W., close-reefed the top-sails, handed square main-sail jib, and mizen; sea getting up and Barometer falling. At 8 P. M. wind North, Barometer 29.00;—an increasing gale attended with hard squalls and rainy dirty weather; handed the fore-top sail. Midnight, Barometer 28.50,\* wind North, blowing a strong gale; handed the fore-sail, brought the ship to under close-reefed maintop-sail.

20th. At 4 A. M. hard gale, attended with hard squalls and rainy dirty weather and high rough sea,—brig labouring heavily and shipping large seas fore and aft. At 6 A. M. still increasing and a dirty appearance,—down top gallant yards and mast; and made the ship snug. At 10 A. M. fore-topmast staysail blew away, ship labouring heavily; cut adrift 11 bales of Tinder from off the quarter and stern davits; at noon wind N. b. W.—Barometer 28.50 and falling, blowing a most terrific hurricane, brig laying down on her beam ends, lee side of the deck under water, labouring heavily, pumps constantly attended to, cut away foretop mast and carried away jib boom at the same time. Ship labouring heavily, working herself to pieces, cut away the lee bulwarks. For the preservation of the ship and the lives of the crew it was necessary to heave overboard all the passengers’ chests, baggage, guns, &c., from off the lee side of the deck. Brig on her beam ends labouring and shipping large seas fore and aft, washing every thing from off the deck. No observation.

\* Possibly 28.80?—H. P.

Lat. by acc... 20' 45' North.

Long. by acc. .... 115' 20' East.

P. M.—Brig laying too under close-reefed maintop-sail, blowing a most terrific hurricane, labouring heavily and shipping large seas fore and aft—laying down on her beam ends. At 2 P. M. wind N. b. W. to North—Barometer 28.40—close-reefed maintop-sail blew away; gale still increasing with very violent squalls, blowing feather white. At 4 P. M. Barometer 28.10, blowing terrifically with a high awful looking sea—ship labouring so heavily, that I momentarily expected to see the brig go down. At 5 wind hauls to N. W. At 6 wind West, blowing terrifically, attended with violent squalls feather white. At 8 Barometer getting up to 28.50—gale more moderate, wind S. W. occasionally hard squalls but not so violent; midnight moderate gale—ship rolling heavily; Barometer 29.00.

20th. Day-light strong breeze, passing squalls—set the fore-sail, and put the ship before the wind—wind S. S. E. Crew employed clearing away the wreck and putting things to rights about deck. Forenoon fresh breeze from S. S. E. and passing squalls and rainy; rigging jury mast—noon set all possible sail; fine pleasant breeze and cloudy. No observation for Chr. Barometer 29.70.

Lat. by obs..... 20' 55. North.

Long. by acc. .... 115' 25. East.

H. BRISTOW, *Master*.

*Brig "Guess," Amoy, 14th August, 1847.—Singapore Free Press, October 14.*

The ship *Earl of Balcarras* was also just on the Southern verge of this Cyclone and running to the Northward towards it though she did not reach it in time, as will be seen by the following abridgement from her Log, reduced to Civil Time.

*The Earl of Balcarras*, bound to China, was on 19th July at Noon in Lat. 14° 19' N.; Long. 113° 27½ East; with a 7 knot breeze N. Westerly and cloudy weather. Course N. E. b. N. At midnight the same.

20th July.—A. M. a long heavy swell getting up. At 3 wind W, N. W. Noon increasing to a gale at West. From 5 A. M. course North. Lat. by Acct. 16° 32' N.; Long. 114° 19' E.; Bar. 29.46. Ther 85°. P. M. Fresh gale West, vessel making but one and two knots against a heavy sea till 9 P. M. At 4 P. M. Bar. 29.42; 10 P. M. 29.48; at 11, 29.50, and at midnight 29.50; wind veering to W. S. W.

21st July.—Gale moderating and at 9 A. M. marked Southerly. At Noon Lat. 18° 19' N.; Long. 114° 26' East.

The *Balcarras*' log we leave out of the consideration of the track of this Cyclone altogether, as though she was doing all she could to get to the Northward, the Cyclone had passed on ahead of her, its passage being faintly indicated by the fall and rise of her barometer.

From the *Guess*'s log however we can distinctly trace that it was one coming down upon her from the E. b. N., the wind being nearly steady at N. b. W. for a long time, till between 2 P. M. and 8 P. M. of the 20th, we find it veering from N. b. W. to S. W., or 11 points of the storm circle (Cyclone points) in 6 hours, or not far from 2 points per hour. It is thus clear that the vessel was drifted by the Northerly gale just out of the centre, though close upon its Southern border.

If, as is very probable (for mistakes in newspaper accounts of gales and hurricanes are constantly occurring) the height of the Barometer at midnight 19th,—20th, was 28.80 instead of 29.50, we may then, allowing it to have fallen regularly from 29.00 at 8 P. M. on the 19th to 28.50 at noon of the 20th, or 0.50 in 16 hours, say that its *average* fall was .031 per hour, and that at the mean time of this 16 hours, or at 4 A. M. on the 20th, the centre was thus about 225 miles from the vessel: and we find it was then “a hard gale.”

From this time, 4 A. M. to 6 P. M. of the same day when the wind was West and the centre therefore bearing due North of the Brig, are 14 hours. And if our calculation of the distance at 4 A. M. is correct it had then travelled the 225 miles in this time, or at about 16 miles per hour, which is not an excessive rate for the Cyclones of the China Sea. It will be observed however that this calculation depends on the topographical error we have supposed for the height of the Barometer at midnight. If at that hour it had really fallen to 28.50, as set down, this would place the centre at 10 P. M. of the 19th within 80 miles of the Brig, but we can barely suppose it moving so slow (for we have as yet I think nothing below seven miles per hour ascertained for the rates of travelling in the China Sea) that it would only reach the vessel at 6 P. M. on the 20th. If we calculate from the fall of 0.20 (29.00 to 28.80) which I suppose to be the true correction of the error in the midnight figures for the Barometer, this will give the mean distance of the centre at 10 P. M. on the 19th to be 175 miles. And as it reached the meridian of the vessel at 6 P. M. or in 20 hours, this was not quite at the rate of 9 miles per hour. Either calculation it will be seen is a sufficient ap-



proximation to the truth to put the seaman on his guard in full time. And I have indeed introduced it, both as shewing the necessity of frequent registry of the Barometer, and when possible, careful copying and printing of the extracts.

#### TRACK Q.

##### *H. M. Steamer VULTURE's Typhoon of October, 1847.*

I am indebted to Lt. Crawford Pasco, of H. M. Steamer *Vulture*, for this notice, which is both valuable and remarkable. It is valuable as shewing that on the Coast of Cochin China the Cyclones (in this instance at least) travel direct to the shore, as in the case of the Coromandel Coast, and it is remarkable as the only log we have of a Cyclone reaching this shore, though no doubt they must frequently do so. I copy Lt. Pasco's letter entire, and in the track laid down, I adopt that from his diagram. There is nothing in the Cyclone itself calling for any particular remark.

##### *H. M. Steamer "VULTURE," Whampoa, Nov. 25th, 1847.*

SIR,—In compliance with the request contained in your very valuable "Horn Book" of Storms, that you may be furnished with accounts of any storms which occur, I beg to transmit a few particulars of a typhoon, experienced by this ship between noons of 23rd and 24th October last, while at anchor in Turon Bay, Cochin China, Lat.  $16^{\circ} 07' N.$ ; and Long.  $108^{\circ} 13' E.$  of Gr., with a diagram annexed illustrating the same. Consulting your book at the time, and using the mean course and velocity of storms in October according thereto as data, I concluded a N. E. gale or strong breeze would be felt at Hong Kong about 6 P. M. of the 22nd, which on my return I found on enquiry to be the case, though its strength had not been sufficient to excite particular attention.

The following table of wind, &c. is copied from H. M. S. *Vulture's* log book.

The figures denoting the force of the wind, and the letters the state of the weather, are according to the abbreviations by Admiral Beaufort, now in general use in H. M. naval service:—

Date 1847.	Time.	Direction of wind.	Force.	State of weather.	Bar.	Remarks.	
Oct. 23d.	Noon	N. W. b. N.	5 to 8	o. q. r.	29.65	At about 3h. p. m. the moon's Perigee. On shore the tide rose so much as to destroy a large portion of native huts situated on the low country. The ship's position was quite landlocked and surrounded by high land, excepting in a Southerly direction, but none nearer than 2 or 3 leagues, except to the East, close under which she lay. Latitude 16° 07' N.; Longitude 108° 13' E.	
	8h. p. m.	Do.	8	o. q. r.	.60		
	10h.	Do.	9	u. q. r.	.56		
	Midnight	North	10	Do.	.49		
24th.	2h. a. m.	Do.	11	u. q. r.	.34		
	4	N. E.	11	Do.	.20		
	5	Do.	11	Do.	.18		
	6	Veering Easterly,	10	o. q. p.	.22		At 6h. 50m. Full moon.
	8	East,	10	Do.	.42		
	10	veering S.E.	9	o. q. d.	.53		
	Noon	S. E.	9	Do.	.55		

CRAWFORD PASCO,

Lieut. R. N.

TO HENRY PIDDINGTON, Esq.  
Calcutta,

## TRACK R.

*Barques SWALLOW and ROB ROY's Typhoon of November, 1847.*

The Barques *Rob Roy* and *Swallow* were both dismasted in this Cyclone, which appears to have crossed the China Sea from the coasts of Luconia, about Point Capones, in a W. N. Westerly direction to Hainam.

The following notice is from a newspaper. I have no further accounts of these two vessels, and in the original, Laboan is printed for Luban, evidently a mistake.

The ship *Sea Witch* (from New York 14th August and Manila 24th instant,) has on board the crew of the ship *Ann and Jane*; that vessel having been wrecked on the Island of Luban on the 8th instant (1847.) She was from London for this port with a valuable cargo, all of which, with the ship, is totally lost. Two of the crew were drowned; and the remainder carried to Manila in a Spanish schooner, and from thence to Hongkong in the *Sea Witch*.

On the 24th instant an English brig was going into Manila dismantled.—  
*Overland Friend of China, November 23.*

The following is the log of the *Rob Roy* :—

*Abridged extract from the Log of the Barque ROB ROY, Capt. J.*

*FRANCIS, from Singapore to China. Reduced to Civil Time.*

6th Nov 1847.—At Noon in Lat. Obs.  $13^{\circ} 51' N.$ ; Long. Chr.  $115^{\circ} 39'$  East; Bar. 29.8; Ther. 84 P. M. Light airs increasing to midnight to a steady fresh monsoon from N. E., N. N. E. and North.

7th Nov.—A. M. increasing breezes, and at Noon fresh gale N. b. W. and squally (from Noon of 6th a heavy cross head sea\* is noted) Lat. Obs.  $14^{\circ} 11' N.$ ; Long. Chr.  $117^{\circ} 45' E.$ ; Bar 29.5; Ther. 84 P. M.; wind N. N. W. to midnight, when under close reefs standing to the N. E. b. N. with strong gales and a high sea.

8th Nov.—A. M. strong gales N. N. W. increasing to hard gale N. W. at Noon; 9 A. M. hove too with head to the Northward; Lat. Acct.  $15.2 N.$ ; Long. Acct.  $113^{\circ} 37'$ ; Bar. 29.50; Ther. 82; P. M. wind N. W.; violent gale, confused high sea and torrents of rain; 4 P. M. shipped a dangerous sea which carried away all the bulwarks, the wind suddenly veering to S. W. and more moderate with a clear break in the sky.† Squared the yards and ran  $11'$  to the N. E. in two hours, under reefed foresail and foretopsail; at 6 wind suddenly veering to South and blowing a complete hurricane, tried to take in the foresail and topsails, but in the attempt they blew to atoms. Ship broached to and was apparently foundering. In attempting to cut away topmasts lost foremast, main and mizen topmasts. Ship righted with 5 ft. water in the hold, lost quarter boats, deck cargo, &c. Midnight blowing a typhoon with heavy rain. Ship lying too with head to the East and wind S. S. E. since 6 P. M.; Bar. 29.60 at 0.30 P. M. 29.50 at 4; and at 6 P. M. fell to 28.40; Ther 62.

9th Nov.—A. M. blowing a heavy typhoon S. S. E.; 4 A. M. gale taking off; 6 A. M. moderating to Noon with wind steady at S. S. E. Noon moderated and clear Barometer rising.

The following logs are abridged from the *Strait's Times Extra* of December 6th, 1847, and the dates are altered to Civil Time.

*Particulars of the Typhoon in the China Sea of Nov. 10th.*—In our last issue we announced the arrival under jury-masts of the *Swallow*, Captain Anderson,

\* Undoubtedly the seas of the outer storm circle and of the "wave of progression," of the whole Cyclone travelling exactly towards the ship.

† Italics are mine. This is another case to those so often cited of the storm disk being seen through.

from Hongkong. The *Swallow* when in about 19 deg. N. latitude encountered one of those singular but destructive phenomena which have buried in the depths of the ocean so many lives. She appears to have had a very narrow and providential escape from foundering, having passed near the centre of the storm. Captain Anderson has obligingly favored us with the loan of his log book, from which some interesting particulars are here annexed :—

The *Swallow* left Hong Kong Nov. 7th and experienced fresh breezes from the N. E. with a somewhat unusually heavy sea. It was not however until the 9th that any change was observable in the atmosphere.

*Extracts from the Log of the Barque Swallow, Captain Anderson, from Hong-Kong to Sydney.*

Nov. 9th. Wind N. E. P. M. Cloudy with rain in all directions ; pumps kept going every hour. At mid-night wind increasing still from the N. E. with a more violent sea. At noon the sun was obscured : Lat. by account 18 deg. 40 m. N. long. by account 113° 0' East.

At 1 P. M. strong gale and a heavy sea—the latter making a passage over all. At 8 P. M. double reefed the topsails, the vessel at this time scudding before the wind and shipping heavy and dangerous seas on deck. At mid-night gale increasing ; the sea lashed up into a complete foam.

Nov. 10th.—At 4 A. M. shipped a heavy sea which swept nearly every thing off the decks, including water casks, spars, &c. At 6 the vessel was labouring severely, the sea making a complete breach over her, and threatening instant destruction, on each occasion taking away something from the deck. The cuddy cabins were now stove in, and nearly every thing washed overboard belonging to the passengers ; breaking through the hatch of the gun-room and destroying the stores. At 9 A. M. both quarter boats filled ; the long-boat, also the cook's house and remaining articles on deck were carried away by heavy seas ; it was now found necessary to cut away the boats from both quarters as the vessel was labouring much in consequence of their filling with every succeeding wave. At 10h. A. M. *it fell suddenly calm*, and continued so for about one hour, in which the wind flew round to the S. W. blowing stronger than before ; all this time the sea was foaming over the vessel, and the men kept constantly at the pumps. At 11 A. M. hove to and cut away the topsails from the yards. It not being possible to quit the pumps, bore up and hove to again at noon ; at this juncture the ship was on her beam-ends, her yard-arms in the sea : the ship became unmanageable. It now became necessary for the safety of ship, cargo and all concerned to cut away the main-mast, which was done ; the ship immediately righted and got before the wind, running before a heavy gale and tremendous sea, plunging the bowsprit under water.

Course N. by E., wind S. W. P. M., after clearing away the wreck of the mast and spars, all hands were again set to the pumps, pumping up sugar and

salt water and no signs of the vessel being in any degree relieved. It was deemed advisable to lighten ship, at 7 P. M. The people at the pumps nearly exhausted. At mid-night the wind moderated, but there was still a heavy sea. The pumps kept going.

*Nov. 11th.*—At 6 A. M. commenced to heave sugar overboard; the passengers all the time working at the pumps and assisting in every way in their power. At 10 A. M. the island of Tinhosa bearing about N. W., at noon kept away for the island for anchorage. At noon, the wind veered to the northward, when the ship bore up for Singapore, having hove overboard 1400 bags of sugar; still making as much water as ever.

*Nov. 12th.*—Course S. S. W. P. M. weather more moderate; all hands employed heaving cargo overboard to lighten the ship. About 2,000 bags of sugar were thrown overboard; at 4 A. M. secured a stay from the mizen mast to the fore-mast and set a jib. At 8 A. M. secured a stay from the mizen mast to the stump of the main-mast and set a fore-top-mast staysail.

*Nov. 13th.*—Moderate winds and clear weather. At mid-night the swell so heavy that the vessel made but little way through the water.

*Nov. 14th.*—Course S. E. Wind N. W. P. M. strong winds and cloudy. At 8 P. M. very gloomy weather; mid-night strong winds and rain—the sea rising. At noon Lat. by account 14 deg. N. long. 111 deg. 2 min. E.

*Extract from the Log of the ship General Wood, Captain Stokoe, from Hong Kong to Singapore. Civil Time.*

*Wednesday, Nov. 9th, 1847.*—At 1 P. M. moderate breezes and fine—weighed and made sail to Singapore.

At 4 P. M. Fresh breezes and cloudy; Barometer had fallen in the previous 24 hours to 29m. 75.

Sunset—Fresh breezes and cloudy, with a heavy swell from the N. Eastward; ship rolling heavily.

Midnight—Strong breezes and cloudy. Furled the mizen top-sail and reefed the jib.

At 4 A. M. *10th Noon* Blowing hard from the E. N. E. and east with a high increasing sea, and threatening appearances in the weather; Barometer falling 29.63.

Daylight—Strong breezes and threatening appearances to E. N. eastward and Ed. with a very heavy swell on; ship rolling heavily at times; Barometer falling to 29.53 made preparations for bad weather. Fresh gale veering to eastward.

At 11 a fresh gale from the S. eastward with a high sea on; ship rolling and straining heavily.

Noon gale increasing at S. east; with threatening appearances.

A strong gale from the S. east with a very heavy sea on ; sent down topgallant yards, and housed mizen top-gallant mast.

At 6 P. M. same wind and weather ; ship labouring heavily and making more water than usual. One pump at work.

At 8 increasing breeze and ditto weather.

At 10 30, Barometer rising 29'. 64.

At 11 30 saw land bearing N. N. W. supposed to be Tinhosa False.

Midnight. Wore ship and set jib, mainsail, and close reefed mizen top-sail.

At 2 A. M. 11 gale decreasing with less sea on.

Daylight—Fresh breeze and cloudy ; weather clearing up a little ; Barometer 29.70.

At 9 hours 30 Mount Tangeon bearing N. N. W.

At 10 hours decreasing breeze and fine.

Noon—Decreasing breeze with a heavy swell on. Mount Tangeon N. W.  $\frac{1}{2}$  W. Lat. by obs. 19 deg. 16 min. N.

The size of the typhoon of November 10th, appears to have been 150 to 160 miles in diameter. For, assuming the *Swallow* at 10 A. M. to have been near the centre, the *General Wood* was about 70 to 80 miles distant on its northern or north-western limit. We learn from Captain Burn, of the *Atiet Rohoman*, that on the 10th November he was to the northward of Pulo Sapata, with light S. E. winds and a very heavy sea from N. and Eastward ; so that, although the wind did not affect the *Atiet Rohoman*, the strongly agitated sea affords evidence that a disturbing influence was in operation to the N. and E. of the last mentioned vessel.

The following notice, also from the above paper, is the only one I have been able to obtain of the *Ardaseer's* share of the Cyclone :—

Since the above was in type, we learn that the *Ardaseer*, in her passage up the China Sea, on Nov. 8th, when in Lat. 15° N. Long. 119° E. encountered a severe typhoon which laid her on her beam ends, with all sails furled. The *Ardaseer* on the 8th was six degrees to the Eastward of the *Swallow*, so that it would appear the storm passed in the line of its track at the rate of about 200 miles in 24 hours. The *Ardaseer* was proceeding Northward so as to run away from the storm ; had she been passing to the S. or W. she would probably have suffered as severely as the *Swallow*—*Editor*.

#### REMARKS.

The *Rob Roy* does not appear to have had more than a fresh gale at Noon of the 7th, but at midnight we may consider her as fairly within the outer circles of the Cyclone, having the wind at N. N. W. and its centre therefore bearing from her E. N. E. She may have been at

this time in about Lat.  $14^{\circ} 30'$  N. ; Long.  $118^{\circ} 17'$  East ; and from this time to Noon of the 8th, when *Capt. Francis* places her in about Lat.  $15^{\circ} 12'$  ; Long.  $119^{\circ} 10'$ , she may have made an E. N. E. course good, or one directly towards the centre of the Cyclone, which, when close upon her, veered first to N. W. and then at 4 P. M. became more moderate, the centre having reached her so far as to place her as it were on its S. E. border with a S. Westerly breeze. She then ran up 11 miles to the N. E. but reached that part at which the wind was at South and blowing a hurricane.

This gives us an idea of what the size of the central space may have been. For if we suppose an octagon (S. West to South, being one-eighth of the wind circle) of eleven miles on each side, this will require a circle of 25 miles to include it. And we may take the *Rob Roy's* run to the N. E. as having been across one side of such an octagon. I have made no allowance in this for the motion of the Cyclone itself, which unless the ship was carried with it, would at least add ten miles more to this estimate.\*

But be this as it may, we can account very fairly for the wind's shifting now to a hurricane at South, by this run of 11 miles, and we must take the first shift of N. W. to S. W., though the last was not of full force, for the true index to the track at that time. If the ship had been lying to, the full typhoon would doubtless have returned at S. W. or thereabouts.

But we have seen before that from the steadiness of the wind at N. N. W. till nearly Noon, it was at first coming down upon the vessel from the E. N. E. to W. S. W. It therefore by this time (Noon to 4 P. M.) was altering its track to the Westward. And as we find that the wind very soon became S. S. E., at which point the vessel being disabled drifting only, it ended also at S. S. E. we must allow that it now travelled away nearly to the W. N. W. or thereabouts.

The *Swallow* appears to have been at Noon of the 9th at about 400 miles to the N. W. b. W. of the *Rob Roy's* position of the 8th, with her Cyclone beginning only from the N. E., or we may say with the

\* Though 35 miles is a large estimate, we must recollect this was not the calm space, but the verge of it, when there was still a fresh S. W. gale. The large calm spaces are perhaps not so rare as we may suppose, and they account for ships lying so long in them, which occurs also when the Cyclone is a slow moving one.

centre at least 120 miles to the S. E. of her, and as at Noon of the 8th, we may call the centre of the *Rob Roy's* Cyclone about 30 or 40 miles to the West of her position, it follows that the actual distance between the positions of the two centres on these days was not more than 290 miles, which would allow a rate of 12.1 miles per hour for its progress on a W. N. W. course, which being both usual and probable, we may fairly and safely assume that it was the same Cyclone which, curving up to the W. N. W. as it cleared the mountains of Inconia, between Pt. Capones and Cape Bolinao, reached and dismasted the *Swallow* in consequence of her ill judged run to the Southward, travelling then, as will be seen by her shift of wind, to the N. W.

On the 10th, at 10 A. M. by the *Swallow's* log, its centre reached that vessel when she was about in Lat.  $16^{\circ} 42'$  Long.  $111^{\circ} 03'$ , so that it had not travelled up more than 130 miles in this 22 hours, or our previous estimate of the distance of the centre on the 9th was too small, or the storm was of larger dimensions, or it had slackened its rate of motion on approaching the high land of Hainam. If we take the whole time (46 hours) between the passage of the centre over the *Rob Roy* on the 8th, and this estimated position on the 10th, the entire distance between the two positions is 7 degrees, or 420 miles, which for 46 hours will give an average of 9.2 per hour, and if we adopted this rate throughout, it would place the centre so as to make the wind at Noon on the 9th, to have been about N. E. b. N. instead of N. E., which it may well have been, since the winds are rarely marked on board of merchant ships at busy and anxious times like the approach of a typhoon in the China Sea, with any especial care. We may also suppose, as this has been well authenticated in other instances, that as above stated, the rate of the Cyclone's motion to have been checked on its approach to the Coast of Hainam.

What is important however to our investigation is, that the Cyclone, which had probably a double curving, though the track is made straight on the Chart, is fairly traceable across the China Sea.

The log of the *General Wood* is too imperfectly given to afford any fair ground for comment. She was evidently to the Northward of the *Swallow*, and felt the N. E. quadrants of her Cyclone, but we cannot say at what distance, as her position is omitted.

The *Ardaseer* was evidently close to the *Rob Roy*, but we have not



even the wind in her notice, and thus it is again almost useless. It is scarcely necessary to add that both the *Rob Roy* and *Swallow* were dismayed through errors of judgment, but of different kinds. The *Rob Roy* might have ran down and hove too\* on the Southern, and the *Swallow* on the Northern sides of the Cyclone, with perfect safety.

(*To be Continued.*)

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*A narrative of our connexions with the Dusannee and Cheannee Garrows, with a short account of their country.—By Capt. C. S. REYNOLDS, Principal Assistant to the Commissioner of Assam.*

The Dusannee and Cheannee country, is bounded on the South-west by the Cullunkee river, and to the East by the Gograh river, which descends from the Garrow hills, and separates the purgunnahs of Mechpára and Caloomalooopára. To the South it is bounded by the country of the independent Garrows, and to the North by the last named purgunnah.

Although we have hitherto considered the Dusannee and Cheannee Garrows as separate tribes, I believe they are both one "Abengyas," and that this distinction without a difference has arisen merely from the circumstance of their bordering on those portions of Caloomalooopára held by the ten anna and six anna sharers respectively. They consider themselves as one and the same people, and I doubt whether any of them have an idea why they have been called Cheannees and Dusannees, except perhaps those who border immediately on the plains. I was unable during my tour through their hills to discover that any line of demarcation had been laid down between the two mehahs by the former zemindárs, and indeed there was no necessity for any, until the estate of Caloomalooopára became divided into shares, which occurred at a time when the Garrows had thrown off even the name of allegiance to the zemindárs.

\* With a little more sea-room she might have run to the Southward till her Barometer rose a little, when the wind would, by the Cyclone passing on, have hauled rapidly to the West and S. W. and she might have made a fair wind round the Western quadrants of it. She unfortunately hove too in the direct track of the centre: a S. S. W. course, for a few hours would have given her good sea-room and the North-Westerly, Westerly and S. Westerly gales of the Southern and S. Eastern quadrants, with which, and daylight, she might safely have passed the Scarborough Shoal.

I can find no notice of the Dusannee and Cheannee Garrows until the years 1822-23, when they were first assessed at 196 Naraiunee rupees, which was increased in the years 1824-25 to 200 Narainnee rupees, and under what circumstances this mehaul escheated to Government we have no records in this office to shew. I believe that like all other Garrow mehaults bordering on the lands of the Chowdries, it was formerly in the possession of the holders of purgunnah Caloomalooopará, which was sold in satisfaction of a decree, and the Garrow mehaults attached to it were retained in the hands of Government for political reasons, and on account of the oppression of the zemindars on the hill people. At this time the Garrows of Currybaree and other parts were in a state of revolt, and the purchaser was well contented to get rid of the Garrow mehaul which had been a source of much annoyance to the former zemindárs, without any gain.

Shortly after the mehaul came into our possession Mr. Commissioner Scott sent a party under the Garrow Serberakar Mirza Bundally Beg, to reduce the Garrows of this mehaul to order, as they had long thrown off any allegiance. This officer seems to have accomplished the object of his mission satisfactorily, as all the chiefs came in and made their submission, and agreed to pay the revenue, which was fixed at 196 rupees per annum, to be paid through the chiefs of each village.\*

The Dusannees however, do not appear to have been properly brought under subjection, for they continued to evade paying their revenue up to the year 1832, when their arrears amounted to 4979 N. Rs.† This circumstance, coupled with the Garrows of Rungtoopará having cruelly murdered four Burmese hunters who had proceeded far into their hills for the purpose of shooting wild elephants, led to a detachment being sent against them, with a view to cause them to surrender the murderers and to make them pay up their arrears. The force sent consisted of a company of Sebundies and 100 Burmese settlers at Singimaree, the whole under the command of Mirza Bundally Beg, the Serberakar. The party proceeded viâ Tikree Killa into the Garrow country to the east of the Dusannee mehaul, as it was thought that they would be able to get into the enemy's country with greater ease by that route than up the Rungi river. At Cherangiri, Mirza stockaded the party and commenced clearing a road towards Rungtoopará. The

\* The agreement is not to be found.

† See Appendix A.

working party was attacked by the Garrows, but the guard over it succeeded in repulsing them with some loss, that on our side being only 1 Sebundy and 2 Burmese killed, and 2 Sebundics and 1 Burmese wounded.

From Major Davidson's report\* it would appear that after the attack the chiefs came in and surrendered, and agreed to pay up their arrears, and as they affirmed that the murderers of the four Burmese hunters had been killed in the attack, a fine of 1000 Rupees was merely inflicted on the village of Rungtoopará for the crime committed. Although the chiefs entered into written agreements, they on one excuse or another evaded paying up their arrears and fine as agreed upon by them, and in the commencement of the cold season of 1834-35, Lieut. Brodie was deputed to make enquiries into the reasons for their not having done so, and also to bring them to order if necessary.

On the arrival of this officer at Bengal Katta, the chiefs of the lower portions of the mehaul came in and tendered their submission; but on making enquiries respecting the arrears of revenue, the ryots affirmed that they had paid in their rent annually to the chiefs appointed to collect it; and therefore they were no longer responsible for the amount claimed from them. On an investigation it was ascertained that several payments had been made by them which had never been carried to the credit of Government, and as the settlements which had been made with this clan appeared most defective and uncertain, it was deemed advisable to grant a remission for the past and to demand the arrears only for the current and preceding year. After some little trouble this was paid up, and also the fine levied on the village of Rungtoopará for the murder of the four Burmese. Lieut. Brodie, at the same time made arrangements that the revenue should no longer be paid through each chief, but direct to Mongring Luskur, who was to be considered responsible for the whole amount. The settlement was also made in Company's Rupees instead of Narainnee.†

After this settlement the Dusannees, although irregular in their payments, continued in tolerably good order until last year, when it became necessary to send a small party of sepoy towards Rissogiri with a view to the apprehension or surrender of the individuals accused of the murder of their chief and massacre of his family. Previous to this

\* See Appendix B.

† See Appendix C.

party being sent every endeavour had been made to induce the chiefs to surrender the murderers but without success, and it was supposed that the expedition of a small force would at once cause them to do so. The party proceeded through the Cheannee country, viâ Rampanee to Rissogiri, and at a short distance from the latter place, they were attacked by a large body of Garrows, who killed the interpreter and severely wounded the guide and one of the leading sepoy. The Garrows were repulsed, but the party was compelled to retire, as the revolt appeared of a very serious nature, but which I have reason to believe from subsequent information, was very much overrated at the time. The season then was too far advanced to commence any military operations, and therefore the only proceedings taken against the Garrows were increasing the guards at the foot of the hills, to prevent their egress to the plains.

In the latter end of November instructions were received to proceed against these rebellious people, and to bring them to order, and a detachment under Lieut. Belli was detached in the commencement of January for this purpose.

We left this on the 10th idem for Singimari, and reached it on the 13th inst. The intelligence I received on my arrival there was of a nature to make me suppose that I should meet with very serious opposition, I therefore determined to proceed at once to Bhogamara, a village at the foot of the route into the Cheannee mehaul, and after summoning in the Dusannee chiefs, should I find it impossible to bring them to terms, or they refuse attendance, to construct a road through the Cheannee country to Rissogiri.

My first interview was with the chiefs of Cheannee, who appeared unwilling to render me any assistance against the Dusannees, and indeed positively refused to help me in cutting the road. I used every endeavour to persuade them, but at the same time informed them they were liable to severe punishment for their contumacy, as every chief of a Tributary Mchaul (much less a Khas Government Mchaul) was obliged, under the agreement they had entered into, to render every assistance when occasion required. As I found that I could not induce them to join me, I determined to shew them that I did not need their assistance, and had demanded from them nothing more than they had stipulated to perform when first brought into subjection; I therefore gave them

their dismissal, and told them they should have no communication with me until I visited them in their own village, backed by the sepoy. The day after my interview, I commenced the road and placed the coolies under a sufficient guard to protect them against any attack, or surprize of the Garrows. On the evening of the first day at the conclusion of our work I was gratified by seeing waiting my arrival at my tent, three or four of the chiefs of the nearest villages, who had come to tender me their services, and that of their followers, and I willingly accepted them.

The next day they brought down 50 followers, and with their assistance we contrived to complete a very tolerable day's work. On my return towards camp I was met by several other chiefs who came to tender their services, and on the fourth day of our labour, there was not a single chief of the Cheannee tribe who had not subscribed his quota of workmen towards clearing the road.

On the evening of the 4th day of my work, I received intelligence from the messengers I had sent to the Dusannee Garrows that their chiefs would meet me at Bengal Katta for the purpose of making their submission, and I determined to proceed there without delay, leaving the construction of the road to Mirza Luskur and the chiefs of Rampanee.

I attribute the chiefs joining me so soon in the construction of the road after their decided refusal, to the circumstance of their seeing that I was determined to carry out my object, and also that if they wished they could not hold out when I had ready access to their villages and could with ease bring up my supplies.

The route from Bhogamara to Bengal Katta lies for the most part over low hills and swampy ground at the base. These swamps are caused by the flooding of the Jingiram, which leaves a deposit on the banks and consequently raises the land above the level of the surrounding country, and the drainage from the hills having no free outlet, the intermediate space becomes a mass of swamp incapable of cultivation.

With a little expense and judicious warping the whole of the country at the foot of these hills might be raised above the floods of the Jingiram, but at present it is a desolate waste. The exact boundaries of the purgunnah of Kaloomalooará with respect to the meahals of Cheannee and Dusannee has never been laid down, and wherever a ryot

of the plains cultivates the zemindár claims the revenue, although I am fully persuaded that he has no right to it. It appears to me an object of the first importance that these boundaries should be accurately laid down to prevent any future litigation.

About 6 miles from Bhogamara, en route to Bengal Katta, are the ruins of the palace and city of the Rajah of Bissondor, which, from their extent and numberless tauks still extant, must have been a place of no small importance in days long gone by. Not one brick now remains on another, of any building except two small Hindu temples, similar to those dedicated to Nursing at this place. They are still in tolerable preservation. Although I made every inquiry in the mofussil I could obtain no information respecting this place, except that the Rajah\* flourished long before the occupation of the country by the Moguls, and was a man of great wealth and power, who held the Garrows in complete subjection. I had no time to examine the ruins minutely, but it would amply repay the curiosity of any person who would do so. I merely mention the circumstance now, that any person who travels that route again may know that such a place is in existence, and had I been aware of it I certainly should have made arrangements for halting at Goalgunge to inspect the ruins. The route from these ruins continues over the same kind of country to Bengal Katta, which is situated on the banks of the Jingiram, and a little below where it is joined by the Rungi river.

*My interviews with the chiefs, and the result.*—I have already communicated in my letters Nos. 21 and 22 of the 29th January, and 3rd February last, and it merely remains for me to say, that having been assured of the good faith of the tribe, I had only to proceed against the rebellious village of Kissoogiri, the heads of which had refused all my overtures of pardon and forgiveness, if they would come in and surrender the murderers. I halted at Bengal Katta 5 days in order that the chiefs might clear the road I directed them to undertake, and on the 24th of January, it was reported ready, and we commenced our march accordingly, and reached Buldagiri the same day, when I received intelligence of the whole of the Kissoogirians having fled. I then

\* May it not have been the residence of Mansing, who was Governor of Bengal, and built the magnificent stone ghaut at Doobri, distant about 15 miles from this spot?

entered into certain arrangements with the chiefs, who consented to all I proposed, and also to bring to me the refugees of the village of Kissoogiri on the following day at Bengal Katta. As there was now no probability of our meeting with any opposition, I determined to return to Bengal Katta, and wait the result of my negociations, which we accordingly did, and reached our standing camp the following day. After waiting the prescribed time, as the chiefs did not make their appearance, or send me any explanation, I determined to proceed at once, and make the enquiry myself, and this time not to stop short of Kissoogiri; and on the morning of the 27th idem we commenced our march.

The route into the Dusannee country, and that by which all the Garrows of this mehaul descend to the Bengal Katta haut, lies from the latter place for the first two miles over a high plain to the Burmese settlement on the Rungi river. Marching along the west bank of this stream for about a quarter of a mile, you come to an extraordinary ridge of granite rocks, which rise like a wall out of the ground, and running across the road to the bank of the river seem to form a natural boundary between the hill country you are now entering and the plains you leave behind. The same extraordinary convulsion which threw up this ridge of stone, as if aware that such would be required, has cleft a doorway through it, which although narrow for elephants, is easily passed by any other laden animals. About  $\frac{1}{2}$  a mile up the same bank of the river the road crosses at a ford immediately below the first falls of the Rungi river, which are caused by another wall of stone similar to that just described, which runs completely across the river and disappears under the hills on either side. The fall however commences some hundred or more yards above, and the river is seen dashing and bounding along over every impediment, till it reaches the barrier, when with one mighty effort it leaps into tranquility below, from whence, as if tired and exhausted with its exertions through the hills, it winds its way quietly along till it finds repose in the waters of the Jingiram. The route now lies up the east bank, sometimes along the edge of the water through massive boulders of granite, and at others over the precipitous slopes of the little hills that restrain the course of this impetuous stream. The road never leaves the margin, except in one instance below Buldagiri, when it cuts across a promontory to save a considerable detour by the river. Our encamping ground was fixed on the west bank of the river

above Buldagiri, on a little hill cleared for cultivation. The village of Buldagiri is situated on the east bank of the Rungi, on a small piece of table land overlooking the river. It contains 13 substantial houses, and the population may be taken at an average at about 130 souls. The chief is a fine old fellow, and bears an honest countenance.

From our encamping ground the road laid along the western bank of the river for about a mile, where it makes a considerable detour to the east of the road, and we did not again catch a glimpse of its turbid waters till we reached Chitskiri. The road between Buldagiri and the above place was excellent, and a decided improvement on the river routes; no ridges of rock or high boulders obstruct the path, and so judiciously has it been chosen to avoid all abrupt ascents and descents, that you might almost fancy you were travelling in the plains.

The hills we passed over were covered with jungle, in all the different stages of Garrow fallow land. Low grass interspersed with old cotton plants, next rank Ooloany grass, thickly studded with quick growing shrubs and trees, and then the shrubs and trees grown almost into forest jungle. When the jungle has attained this growth, which it does in 7 or 8 years, the Garrows think the land has rested sufficiently, and recommence the labour of clearing for cultivation.

The village of Chitskiri, from which we encamped but a short distance, is prettily situated on the east bank of the river, but a few of the inhabitants have located themselves on the west also. Between these two places, for the convenience of villagers, one of those picturesque and useful rattan suspension bridges has been thrown across the river. I remarked several of them in different parts of the river to enable persons to pass over to their cultivations, which are frequently situated on the opposite bank to what the villages are. The old chief of Chitskiri I was much pleased with, and in cutting and clearing the road, as also bringing up provisions, I found him and his dependents most useful.

From Chitskiri to Rungtoopara there are two routes, one along the bank of the river, and the other over the ridge of hills, which the first passes under. The first is impassable for elephants and laden cattle, being blocked up with ridges of rock and boulders, between which only individuals can pass. The bed of the river is also impracticable, and Rungtoopara would be impregnable from this side, were it not for the route over the hill, which although a little abrupt, is still far from bad.



Descending to the bank of the Rungi it again falls into the old road, which continues along the margin to Rungtoopara. This is a superb village, or rather string of hamlets, which line both sides of the river for at least a mile and a half, and I should think they contain at the lowest computation not less than 1500 souls.

The chief of this village is Moonkual ; he has however, no real title to the distinction, but being a clever intriguing man, he has gradually usurped the authority of the old hereditary chief, who is in his dotage, and his heir and son-in-law being weak in intellect, the people have chosen for themselves a man capable of directing their counsels and managing them. They still, as a matter of form, submit any important subject for the consideration of the old chief, but I query whether his opinion is attended to when it is at variance with that of Moonkual. The power this man possesses over the people is astonishing, and his will is law. If we can secure his good faith we need fear no further outbreaks of the Dusannees.

As I intended to make Rungtoopara my head quarters during my residence in the Dusannee country I pitched our camp upon a hill at the head of the village, as it was admirably calculated for defence in case of any treacherous night attack, and a few sepoy would be sufficient to protect our baggage and standing camp when we proceeded against Ripoo giri. I obtained ready assistance from the villagers in erecting temporary sheds for the sepoy, and half a dozen stout fellows stepped forward into my tent and knocked up a Meehan for me to sleep on. As they were working with Lumbarees alongside of me I thought how easy it would be for any of them to settle my account and dash into the jungles, when they would never more be seen, but treachery of this kind forms no part of the Garrow character I believe.

From the top of the elevation we were on, the hills for miles around were cleared for cultivation, whereby we obtained a tolerable view of the surrounding country. At our feet ran the Rungi river, whose course we could trace coming from the south as far as Ripoo giri, a short distance from which it appeared to take a south-east direction towards some high hills, which I have laid down in the map. To the east 8 or 9 miles distant, the Tikree Doar hills rise abruptly above those of Dusani, which gradually decrease the farther south-west they run. Here and there the eye lighted on a small patch of cleared land, and denoted that a

village did not lie far off. By this I took the bearings of those places I have entered in the map, and much reliance therefore cannot be placed on their exact position, yet it will give a tolerably correct idea of the whole country. As far as the eye could reach to the south the hills appeared to be of the same uniform appearance as those we were on, and to have been at some time or another under cultivation; amongst it we could discern several cleared patches pointing out the habitations of some of the independent Garrows. At the time I was making my observations the atmosphere, which is always more or less husky and obscure at this season of the year, was tolerably clear, and calculating that as a crow might fly I was then 25 miles from the plains, and that my visible horizon was limited to 15 miles beyond, my knowledge of the country may be supposed to extend half the distance across the promontory of the Garrow hills, yet I could discover no sterile precipitous rocky mountains which the Garrows wish us to believe are the features of the independent Garrow country, and I believe they merely do so to give us a false idea that the country is inaccessible. As far as I could see the hills presented no greater obstacles to the construction of a good road from Rungtoopara into the independent Garrow country than those we had already surmounted, through which as good a mail coach road might be constructed as through any of the mountains of Wales.

From Rungtoopara to Ripooigiri is a distance of six miles. The road winds along by the side of the Rungi river, and thence over a small hill till it meets the same stream a few hundred yards from the last named village. The lands for miles around had been cleared for cultivation, and our march was far more cheerful than any of the preceding, as we had a fine view of the surrounding country. I had heard that the Ripooigiri Garrows had barricaded the road in several places and plauted it thickly with "Panjees," or sharp bamboo spikes, but as I could not find out the exact position of their ambuscades, I persuaded the Garrow chiefs who volunteered to act as guides to head the party and shew us the route, knowing full well that long before we reached these places that they and their followers would drop to the rear. They preceded the detachment about forty yards, marching in battle array. Each man armed alternately with a Lumbarce and bamboo shield, and spear and shield, and in the attack they form file, the latter fighting over the shoulder of the former. We had marched in this manner about 1

miles or more, when the leading Garrows shewed symptoms of uneasiness, and one by one gave up the post of honor, and at last they all came to a dead stand, and refused to advance any further. I then drew them up on the side of the hill, and the detachment stepped to the front, and commenced picking its way through the "Panjees" to the bottom of a deep ravine into which the road dived, and no sooner did the leading files commence the ascent on the opposite side than we were saluted with a shower of darts and stones thrown by a party of Garrows from behind a barricade across the road. The descent and ascent into and out of the ravine was through dense jungle, and we had no opportunity of getting a fair view of our enemies, but a couple of well directed volleys right and left made the place too hot for them, and the leading files having demolished the palisade we rushed through in pursuit, but the enemy had vanished. We then proceeded on to the village, which was distant from this spot about  $\frac{1}{2}$  a mile, where we expected to meet with serious opposition, but whether the Garrows had been more severely handled than they expected and had lost some of their leaders in our carrying their outpost, I know not, but on entering the village we found it deserted, although every preparation had been made for resistance. The village itself was stockaded and the only approach to it along the precipitous banks of the Rungi had been blocked up with felled trees, and the path planted with "Panjces" for a distance of 200 yards, and the side of the road inland for upwards of 40 or 50 paces. The "Panjces" we were compelled to shave off even with the ground, as they had been planted so deep that we could not extract them, and the trees we were obliged to cut to pieces and remove. I would suggest to any person who may go in command of a similar expedition, to take a small band of coolies to act as pioneers, equipped with "Doas" and "Kodals." In the present instance the sepoy's had some Kookeries (Nepaul knives) and the party had been furnished with "Kodals," but if we had not been so provided we might have been detained some considerable time in getting to the village, as it was, we were an hour and a half getting over 200 yards of road. Every company of light infantry in this jungle country should be equipped with "Kookeries," which should be served out to them from Government.

As there was no hopes of inducing the people to surrender after the numerous proclamations I had issued to them, offering pardon and for-

givenness to all excepting the murderers, who would come in and give themselves up unconditionally, and as they appeared to me to require a severe example for their contumacy in attacking us, and also as my instructions did not warrant my detaining the detachment in these unhealthy jungles hunting a few individuals who might be apprehended by offering adequate rewards, I directed the destruction of the village and its defences, and after binding down the chiefs to seize and forward to me the offenders should they ever enter their respective jurisdictions, we commenced our retreat to the plains.

On our arrival at Rungtoopara, I regaled the chiefs who accompanied us with a good dinner, and lots of liquor, which they appeared to enjoy amazingly, but nevertheless "Moonkna," the chief and his brother-in-law, although fond of a good carouse, came into camp at an early hour and slept there during the night, as in fact they had done since our arrival, as a kind of hostages for the good behaviour of their dependents. This they did of their own accord and not at my instigation.

The morning after our return to Rungtoopara we commenced our march back, and were honored by all the ladies of the different villages we passed through coming out to look at us, and although all the beauty and fashion of the Dusanee country was assembled, I must confess I never beheld such a horridly ugly set. The women labor as hard as the men, which of course gives them a coarse appearance, but still amongst the youthful I could not discover a single creature with even a pleasing expression of countenance. Their dress does not heighten their charms, which consists merely of a broad band of cloth encircling the waist and reaching half way down the thigh, the other portions of the body being entirely exposed. Round their necks they wear innumerable strings of brass knobs, not unlike the heads of children's arrows, and in their ears large brass rings of various sizes, and occasionally in such great numbers that the wearer is compelled to put a strap through them, and by passing it round the forehead, relieve the lobe of the ear from the great weight attached to it, and which would tear through, were it not thus protected.

The women are I believe chaste, and intrigues with them are generally punished in a summary manner amongst the independent Garrows. A man taken in open adultery, if not at once dispatched, is tried by the heads of his village and sentenced to pay a large fine in expiation

of his crime, but if it is not paid on the exact date, the injured man is considered at liberty to take the life of the adulterer whenever he can find opportunity. If a man succeeds in absconding for a time from the wrath of the husband, but is afterwards apprehended, he is tried as before, and adjudged to pay a fine of the same description, but of less amount than the former, in forfeiture of which the injured man is at liberty to wreak his vengeance on him whenever he is able.

This last fine is called "Gulla Bachana," and the former "Dhy," by the lowlanders.

The laws of marriage and inheritance are precisely the same amongst the Dusannee and Cheannee Garrows as the other Garrows, and by a reference to Mr. Elliott's and Lieut. Dalton's reports, an accurate and full account of them will be found. Respecting their religion I made no enquiries when I was on the spot, and therefore am unable to give any satisfactory information.

In their political relations I believe each chief is entirely independent, and governs his own dependants with the assistance of a punchyat of the heads of houses. In affrays of a serious nature, as in the massacre of the old chief of Ripooigiri, it is customary I understand for the chief in whose jurisdiction it occurs to invite the neighbouring chiefs to sit with him, and give him the benefit of their advice. In the event of an inroad from the plains I believe all join under the most substantial neighbouring chief to resist it.

We have been in the habit hitherto of calling on the Government Luskur of the mehaul, in which a murder takes place, to give up the offenders without any reference to the "Locma," or chief of the village to which the offender belongs. This I am persuaded the Luskur is in most cases unable to perform, as although he collects the Government revenue, he has no further authority than over the dependants of his own village, and the practice should be discontinued.

The cultivation of these hills is carried on in precisely the same manner as amongst the other Garrows. Their implements of husbandry being a hoe, a Doa, and a Lumbaree, but with these very inefficient tools a man and his wife are able to bring under cultivation between 3 or 4 biggahs of land annually, besides sowing, reaping, housing and carrying the produce to market. Their labor is unceasing, as the land is too poor to yield more than three crops, one of Assoo, one of cotton

sown with Khoni Dhan, and one of Assoo again. After this the land must remain fallow, until it is completely covered with tree and shrub jungle, which it generally is in 7 or 8 years.

The chief productions of the hills are cotton, Indian corn, Assoo Dhan, millet, chillies and yams. Cotton may be considered the staple product, and on it they are dependant for the other necessaries of life their hills do not yield.

Although I made every search during my time for coal, limestone, and iron, I could discover none. In a little stream to the south-east of Bhogamara, I picked up some pieces of potter's clay; it was white and appeared of a good kind, but I could not discover the vein from which it had been washed. The Mundul of the village however told me that he could shew me any quantity, but I had not time then to accompany him.

At the foot of the hills, in the direction of the Rungi pass and Lamma Mitur hills, is a forest of Saul timber, which properly belongs to Government, but is at present disputed by the zemindar, and the case cannot be definitely disposed of, until the boundary between the estate of Caloomaloo para and the Dusannee country is laid down.

The trade with these Garrows is carried on entirely at the haunts of Bengal Kutta and Rajaballa, but I have seen some of the Dusannees trading as low as Pootemaree. Money is but little used amongst them, and the medium of their exchange is cotton, the indigenous production of the hills. In a year of scarcity, when the cotton is insufficient for their demands, they are compelled to extract from their hidden treasures a few "Korahs" or dishes of bell metal, which they sell, or barter for the supplies they require. Every substantial Garrow has generally a supply of these articles, which are considered heir-looms in the family, and are handed down from father to daughter, from generation to generation, and it is only in the event of dire necessity they ever part with them. These dishes vary in size and shape as much as the brass "Sooreahs" of the Bengalees, to which they are not dissimilar, the chief difference being that the rim of the latter is outside and that of the former inside. They are much prized by the Bengalees, and are purchased by them with avidity.

I have never been able satisfactorily to ascertain where these articles are manufactured, and where the Garrows obtain them from. The

Garrows themselves are unable to give any information on this point, and the general idea amongst the Bengalees is, that the Korahs are manufactured in Sherpore, zillah Mymensing, and are disposed of to the Garrows of that district, who again sell them to those of this. If this was the case the Bengalees could obtain them at a cheaper rate on the spot, than they can from the Garrows, and there would be no occasion to export them to Bengal, as they at present do from here, at least if the manufactory at Sherpore is still extant. Some of the Korahs are encircled with a band of embossed figures of men, women, and animals, which must have been moulded on at the time of manufacture. They are well executed and reflect the greatest credit on the state of the arts, wherever they are made. There is also a small kind called "Deo Korahs," beautifully embossed as above described, these the Garrows hang up as their household gods, and worship them. Should the possessor of one neglect to pay his accustomed devotions to it, and to sacrifice to it monthly a fowl, he is certain of being afflicted with some bodily ailment, and my informer told me that his mother was afflicted with an enormous tumour on her hip, in consequence of her neglecting to pray and sacrifice to it, but that after doing so, and promising a stricter attention to her duties, she was relieved; he told me he firmly believed in its power. If a person performs his devotions to the spirit which inhabits the Korah, with increasing fervour and attention, he is generally rewarded by seeing the embossed figures gradually expand. The Garrows believe also that when the whole household are wrapt in sleep that these "Deo Korahs" make expeditions in search of food, and when they have satisfied their appetites they return to their snug retreats unobserved. I merely mention these superstitions, as I do not see them alluded to by either Messrs. Elliott and Sisson, or Lieut. Dalton. I believe the Mirees have a superstition something similar regarding the "Deo Guntas," which are brought from Thibet.

Mr. Sisson says, the Garrows eat every description of animals but kites and jackals, and I have been given to understand that those of Dusannee and Cheannee are not more particular on this head than their neighbors. They are particularly fond of dogs, which are reared and sold by the Bengalees at the hauts in great numbers, and form a very profitable article of their trade. Their cooking is scanty, and the meat is often eaten half raw. The utensils they use in common are

small earthen pots, purchased in the plains, but on great occasions the Korahs above described are brought into requisition. On a journey and when travelling lightly the Garrows dispense with the cooking pot entirely, and use merely the joint of a bamboo, in which they boil their food.\*

With respect to the climate of this country, I ought not to speak unfavorably, for during my stay in it, I enjoyed most excellent health, but it is reported to be the most insalubrious portion of the Garrow hills, and Major Davidson, in an official report, states on the authority of Lieut. Whitelock, that out of 6 Europeans who entered it for only one day, 4 died.†

The inhabitants however do not shew any symptoms of living in a bad climate, and appear a very healthy, robust race. During our progress through the hills, however, I always took the precaution to pitch my camp on the top of some cleared hill, and I attribute the general good health of the detachment with us, and also of Lieut. Belli's and my own, to this circumstance. I have to thank Lieut. Dalton for the hint, who in speaking of the climate of the Garrow country, says, cleared spots are always to be found, and though water may not be near, it is better to suffer a little inconvenience on this account, than to put up for the night in confined vallies where the exhalations are deadly.

In conclusion I beg to annex a copy of the translation of an agreement entered into with the chiefs at Bengal Katta, together with a copy of the settlement made, by which the revenue has been increased from 136 to 306 rupees annually, and each village assessed as in mehaul Cheannee; also a list of the villages of that division.

P. S.—In the letter which accompanies this paper I have offered a few suggestions regarding the opening out of roads to connect our markets, and which I hope will eventually lead to a good one being constructed across the Garrow Hills into Zillah Mimensing, which, by causing a free communication with the plains on either side, would in my humble opinion more speedily conduce to the civilization of the Garrows than any other method that could be devised for the promotion of this desirable object.

\* As is commonly done by the Dyaks of Borneo.

† Vide letter 9th January, 1835, to Agent Governor General.



## APPENDIX A.

*Extract of a letter from Major DAVIDSON, Principal Agent Governor General, to CHARLES SMITH, Esq., Acting Agent Governor General, dated 14th Dec. 1833.*

*Para. 4th.*—The murder of the four Burmese is not the immediate cause of the necessity of making an incursion upon the Dussanee Garrows, it has been rendered necessary by insubordination which has existed for some years, and by their annually threatening to invade the lowlands about Singhermary and Curribarry.

*Para. 5th.*—The Burmese who have been murdered went into the Garrow Hills for the purpose of hunting elephants for the sake of their tusks, and their murder was not, till the receipt of Mirzâ's report, known, as they had gone into the hills and were not expected back for some time.

*Para. 6th.*—Every measure will be taken to prevent the necessity of having recourse to firearms before they are made use of, and the murderers and revenue will be in the first instance demanded, but from the knowledge I possess of their character, I am satisfied these demands will not be attended with success.

I have, &c.

(Sd.) A. DAVIDSON,

*Princl. Asst. to Agent G. G.*

True Copy.

C. S. REYNOLDS, *Princl. Asst.*

*From Major DAVIDSON, to Capt. JENKINS, Agent Governor General, 15th Sept. 1834.*

*Para. 3rd.*—In reply to the first question in Mr. Macsween's letter, I beg to state that the acts of insubordination complained of consists in refusing to pay their revenue, murdering four Burmese who went into their country, and threatening to murder any person sent to demand revenue, and constantly threatening to burn the village and plunder the hauts on the frontier. No revenue has been paid to government by the Dusannees since 1829-1830, as reported to your predecessor by Captain Bogle, under date 15th July 1832, in the 19th paragraph of his letter.

True Extract.

C. S. REYNOLDS, *Princl. Asst.*

## APPENDIX B.

To C. MACSWEEN, Esq., *Chief Secretary to Government, Fort William.*

Sir,—I have the honor to report for the information of the Vice President in Council that the Dusannee Garrows of this frontier, reported in my letter of the 5th instant, as being in a state of insubordination, have been reduced to obedience.

*Para. 2nd.*—Under the authority of T. C. Robertson, Esq., late Agent to the Governor General on this frontier, I dispatched Mirza Bundally Surbrokar of the Garrow Hills to reduce the insurgent Garrows to obedience, and I regret to state the Garrows having made a sudden attack upon a party of Sebundies and Burmese who were guarding a party of 120 coolies employed in cutting a road through the jungle, our party sustained a loss of one Sebundy and 2 Burmese killed, and 2 Sebundies and 1 Burmese wounded. The Garrows were however repulsed after sustaining a loss of about 25 men.

*Para. 3rd.*—In consequence of the alarm created on the frontier villages I was under the necessity of requesting military aid from Major Montcith, commanding at Jamulpore, as reported in my letter of the 5th instant, who dispatched two companies under the command of Captain Marshall to Singheemary, but as the Garrows had submitted before Captain Marshall's arrival, I have requested that officer to return to Jamulpore.

I have, &c.

(Sd.) A. DAVIDSON,

*Princl. Asst. to G. G.'s Agent.*

True Extract.

(Sd.) C. S. REYNOLDS,

*Princl. Asst.*

*Goalpara, 14th March, 1834.*

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 APPENDIX C.

*Extract of a letter from Agent Governor General to W. H. MACNAGHTON, Esq. Secretary to the Government of Bengal, Political Department, Fort William, dated 21st, January, 1835.*

*Para. 3rd.*—I have to refer to my letter of the 27th November for my instructions ; I considered that the Dusannee Garrows were in arrears

of rent from short payments for several years, and that for their refractory conduct, and the expenses we were put to in the expedition against them in the years 1833—1834, they had been fined to the extent of 1000 rupees, besides having this against them, I conceived that the outrage some individuals of this tribe had committed in putting to death 4 Burmese hunters had been unavenged.

*Para. 4th.*—But it will appear from Ensign Brodie's letter of the 5th December that it seemed to be the impression that the fine had been imposed in satisfaction of that outrage, and that such had been the suspicious conduct of the immediate persons employed in the payment and receipt of the rents, that it was doubtful to him whether we had any just claims to arrears at all except for the past and current year.

*Para. 5th.*—Under these circumstances, Ensign Brodie proposed to limit his demands upon the chiefs to the payment of these arrears, and of the fine which were distinctly acknowledged, to I which of course assented; after some delay the whole of the fine has been made good and arrangements have been made for the payment of our rents by villages direct to our authorities, instead of through the chiefs, on whom there rests a suspicion of having appropriated a portion of the sums paid. The arrangements concluded with the chiefs by Ensign Brodie are contained in his letter of the 13th instant, and will, I trust, be approved by Government.

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#### TRANSLATION.

*A copy of an agreement entered into with the chiefs of Dusannee, at Bengal Katta.*

Your Lordship having arrived at Bengal Katta, in the Garrow country, we, the subjects of the Hon'ble East India Company, have written and subscribed to the following articles, for the purpose of shewing that we are certainly such, and should we ever act in opposition to the said articles we shall be liable to punishment.

*Article 1st.*—We agree to abstain from committing murder either in our own clan or in any other, or will we permit any amongst us to do so, or to commit any other heinous offences, that we may be able to prevent.

*Article 2nd.*—It was our former custom to hang human skulls in our houses. We hereby agree to abstain therefrom for the future.

*Article 3rd.*—All disputes which may occur in our jurisdiction requiring investigation, we will endeavour to settle with the assistance of a punchyat of 4 or 5 of the most influential chiefs amongst us, and in presence of the disputing parties, and should we be unable to settle it ourselves, we will report the same to the Hunt Mohurir, with a view to its being settled by your Lordship.

*Article 4th.*—When any officer or Government servant may have occasion to travel through our country, we agree to clear the roads in our several jurisdictions and to furnish him with coolies and render him every assistance in our power.

*Article 5th.*—When any officer or his deputy may arrive at Bengal Katta, and summon us to attend him, we will instantly do so, and if it is necessary for us to attend him at any other place we agree to do so on his summons.

*Article 6th.*—We agree to prevent any independant Garrows from entering the Government territories through our jurisdictions, with intent to murder or commit any other disturbances.

*Article 7th.*—When any officer or Government servant arrives at our Doar, we agree, on being called on, to pay without delay the revenue due by us.

*Article 8th.*—The road which has been cleared from Bhajamara to Kuntanangiri, and Bengal Katta to Ripooogiri, we agree to keep clear every year throughout our respective jurisdictions from 24 to 30 feet wide.

Signed by the Locma of RUNGTOPARA.

” CHITSKIRI.  
 ” DERSEGIRI.  
 ” DUDINGIRI.  
 ” MAGULPARA.  
 ” DULIONGGIRI.  
 ” CHANNAPARA.  
 ” MORUNGIRI.  
 ” BULDAGIRI.  
 ” BOKONGIRI.  
 ” JUNGRAPARA.  
 ” CHERANGIRI.  
 ” DONGUPARA.  
 ” CHANNANGPARA.  
 ” NEJOGIRI.

True translation.

(Sd.)

C. S. REYNOLDS,  
*Princl. Asst.*

The undermentioned were not present, but they had previously made their submission to me:—

|            |          |               |
|------------|----------|---------------|
| Doongrang, | Locma of | TEPATANGIRI.  |
| Monka      | „        | RUNSEIGIRI.   |
| Moonsing   | „        | CHAMPAKPARAH. |
| Tezing     | „        | KUNTANANGIRI. |
| Neusang    | „        | RUPOOGIRI.    |

*Census of Mehaul Dusanee.*

|     |                         |             |             |
|-----|-------------------------|-------------|-------------|
| 1.  | Rungtoopara. . . . .    | 100 Houses. | 100 Rupees. |
| 2.  | Repoogiri, . . . . .    | 2           | 2           |
| 3.  | Chetskiri, . . . . .    | 20          | 20          |
| 4.  | Dersegiri, . . . . .    | 12          | 12          |
| 5.  | Dudengiri . . . . .     | 20          | 20          |
| 6.  | Kuntanangiri, . . . . . | 7           | 7           |
| 7.  | Magulpara, . . . . .    | 10          | 10          |
| 8.  | Dabougiri, . . . . .    | 11          | 11          |
| 9.  | Channapara, . . . . .   | 7           | 7           |
| 10. | Morungiri, . . . . .    | 20          | 20          |
| 11. | Buldagiri, . . . . .    | 13          | 13          |
| 12. | Bokongiri, . . . . .    | 12          | 12          |
| 13. | Jungrapara, . . . . .   | 10          | 10          |
| 14. | Cherangiri, . . . . .   | 14          | 14          |
| 15. | Ransagiri, . . . . .    | 15          | 15          |
| 16. | Tepatangiri, . . . . .  | 7           | 7           |
| 17. | Champakpara, . . . . .  | 1           | 1           |
| 18. | Doongapara, . . . . .   | 4           | 4           |
| 19. | Chanangpara, . . . . .  | 12          | 12          |
| 20. | Negogiri, . . . . .     | 9           | 9           |
|     |                         | 306         | 306         |

The mehaul contains 306 houses of substantial persons, which may be estimated to hold 10 souls each—in population therefore 3060 persons of all ages and sexes.

*Names of villages in Dower Cheannee Garrow Mehauls.*

- |                      |                     |
|----------------------|---------------------|
| 1. Rabungiri.        | 14. Maudaparah.     |
| 2. Markhagiri.       | 15. Tangreeparrah.  |
| 3. Lengparah.        | 16. Juchaparah.     |
| 4. Kolaparah.        | 17. Bichdokparah.   |
| 5. Rakhoparah.       | 18. Khorchangparah. |
| 6. Khosurparah.      | 19. Malugiri.       |
| 7. Sindaparah.       | 20. Sangbuck.       |
| 8. Bindangiri.       | 21. Boreeparrah.    |
| 9. Runggoogiri.      | 22. Romogiri.       |
| 10. Boreeparrah 1st. | 23. Domreegiri.     |
| 11. Choureeparah.    | 24. Ramrungiri.     |
| 12. Dangrungparah.   | 25. Mansangiri.     |
| 13. Dingsaparah.     |                     |

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*Visit to Dewangari.—By Lieut. E. T. DALTON, 9th N. I.*

I yesterday carried out my project of paying Dewangari a visit, and I must give you an account of my excursion.

On the 14th January, I halted at Soonbunkotta, from which I had been informed, I might go to Dewangari and return the same day, but when I declared my intention of proceeding next morning I was told it could not be done. The days being now so short, however I was determined on making the attempt, and sent up to tell the Rajah I was coming. We started at 8 A. M., and though on the preceding evening all were expatiating on the difficulties of the road, endeavouring to dissuade me from going, I now found all the villages and pergunnah authorities anxious to accompany me, and I had not less than a hundred followers, consisting of the Wuzeers of the Dooar Borkot and Sella, their Patwarrees and Takoorials, and a body of Cachari voluuteers.

For the first two miles our route lay over a grassy plain partially cultivated by the Soonbunkotta villagers, which the Dia river in its various wanderings had strewn with large stones. A table-land rises from this, shewing a bold cliff towards the plain, and giving a breadth of from one to two miles of flat surface to the foot of the hills. At the

gorge of the hills through which the Dia, now a small stream, but a large and very mischievous one in the rains, emerges on the plains, we found the Bootia Chokey. This consisted of two or three huts only, but nearly as many hundreds of people, men, women and children, were here awaiting a favorable phase of the moon to proceed on their journey to the plains. There were besides these a considerable number of Boots and Bootnis, who make this their dwelling place whilst the intercourse with the plains is open, attending upon an official styling himself in parlance with me, the Deka Rajah, who sits here at the receipt of customs, levying tolls on the merchants, and assess from our ryots for cutting wood in, taking potter's earth from, fishing, or cultivating cotton in the Bootia territory. The Deka Raja was respectably dressed and very polite. He invited me to come up and sit in his office, which is a snug little boarded apartment looking out on the river. I had no time to spare, but I sat with him a few minutes to recompense him for the trouble he had taken in preparing a seat for me, a little platform covered with red cloth. He looked like a Chinaman without a tail, his head being close shaven. The road now lay up the rocky bed of the Dia, in crossing which I made use of an Assamese dola or trugon, which on the shoulders of Cachari bearers I found a very convenient vehicle for hill travelling, though I only mounted it when I should otherwise have been obliged to wait, as I could proceed more rapidly on foot. The river flows through a very narrow ravine, sometimes a mere chasm in the rocks, which rise precipitously on both sides. The descent is rapid, bringing down large boulders which considerably obstruct the road, but for a north bank hill highway I did not consider it a difficult one. The hills in the vicinity of the river are nearly destitute of fine timber trees, being mostly covered with grass, bamboos, and low shrubs. The pine apple tree (I forget the proper name of it) which I found in such luxuriance in the valley of the Soobunskeri is also here a leading feature in the landscape, and there are other palms. Leaving the main stream of the Dia to our left, we continued our march up the bed of its most easterly affluent. Its passage between the rocks was in some places only two or three feet in width, and the hills now rising high above us on both sides, keep this little dell in almost perpetual shade. About half the march was up this stream, and it is the worst part of the road. For the remainder, though the ascent is severer, the path

over the hill is wider, and free from slipping stones, and the country is more open. About noon we reached the first Bootia house, and shortly afterwards the temple, which, at least the interior of it, is worth more than the cursory inspection I had time to give it. It is a square stone building with gable ends and thatched projecting roof. The gable fronting the north has a verandah, or rather a projecting balcony of timber, behind which a well constructed frame work with several doors admits light into the temple. I was ushered in, and found in front of the window a highly ornamented altar, on which various utensils and offerings were placed in front of a recess, containing three large Buddhist images, all seated in the usual cross-legged attitude absorbed in heavenly contemplation. They appeared to be formed of clay, were exceedingly well executed and resplendent with gilding. The apartment before the altar, about 20 feet square, is boarded, and the walls are entirely covered with paintings of figures in similar penitential or devotional attitudes as those in the recess, but differently dressed. They resemble Chinese paintings, but I was assured they were the work of a village artist. If so, they are surprisingly well executed, the colours very brilliant and well chosen, and drawing tolerably correct; gilding was introduced to heighten the effect. My guides pointed out to me two sockets in front of the altar from which a pair of very handsome elephant's tusks that formed an ivory arch in front of the images have lately been stolen by some of our rascals, I make no doubt; I hope I shall be able to trace them.\* The Bootias hold this temple in too great veneration ever to have thought of committing such a (to them) sacrilegious theft. Being on the high road to Dewangari, it is well known to all our people, who come up here to trade; there is no house very close to it, and no one lives in it, consequently there was no difficulty in removing unseen any thing it contained; besides the tusks, some of the altar vessels were removed, "and the gods looked on all the time without doing anything to punish the marauders," innocently remarked my Bootia Cicerone, as if he considered that by far the most extraordinary part of the story.

A priest's house also of stone stands near the temple; it is two-storied, and with its projecting roof and balconies has rather a picturesque appearance. Of the other houses seen, some were of stone, some

\* The thieves have subsequently been caught and punished.



partly of stone and partly of timber, some all of timber. They had most of them rather a delapidated appearance, and several were wholly deserted. The temple is about a mile and a half from the residence of the Rajah. The path between appears to have been at one time lined with houses, but their sites are now overgrown with jungle, the former occupants having settled in our territories. The path from the temple winds along the northern face of a mountain, overlooking a valley, in which there is some appearance of cultivation. About half a mile from the temple we came suddenly on a stone obelisk built on a projecting spur of the hill, rounding which, a fine view was obtained of the Rajah's house and village. Several similar obelisks standing boldly out on the most prominent eminences formed a peculiar feature in the landscape. They are all of the same form—a square pedestal with projecting base, and cornice gradually diminishing from a height of six or eight feet, by steps, to the base of a globe, which is surmounted by a spire. I was informed that they were constructed entirely for ornament; this appears a degree of refinement to which we could scarce have supposed the Bootias had attained, yet their varied but always effective situations supported this motive for their erection. They had each a tablet with inscriptions, most probably in laudation of the person who built them. I had unfortunately no one with me who could read the Bootia character. The Rajah's house is situated on the ridge of a lofty hill commanding an extensive view of the plains of Assam to the south, and having a fine open valley with cultivation to the north. The village appeared to consist of but few houses, and these scattered and dilapidated, as if the proprietors cared little for preserving them. Whilst making a hasty sketch of the view from the obelisk, some of the Rajah's people, with caparisoned ponies and a mule came up, and one of these they insisted on my mounting. They also mounted my chaprassies and thus we proceeded to the Rajah's dwelling, and surrounded by a dozen wild Bootias, who held me on the poneys back, some by the legs, others by the tails of my coat, whilst they kept up an incessant exhortation to the animal in their own language, all of which they assured me he perfectly understood, to be careful how he stopped and proceeded. The vice-regal lodge is a large upper-roomed square stone building, with gable ends, a very low and wide doorway, and five large windows in a row in the upper story, four of which have projecting covered balconies

of timber. It gave me the idea of an old-fashioned farm-house, which after having been long deserted and neglected had suddenly been adopted as a place of shelter and placed in a state of temporary repair. The lower story, with exception of the great yawning entrance, is nearly destitute of apertures for the admission of light or air—in this respect resembling a block-house. I expected the Rajah would have come out to meet me, but this he did not do, and I for some time debated in my own mind whether, under such circumstances I should go to him. However as I had come to his village an unexpected and an uninvited guest, I decided that it would not be derogatory to my dignity to be conducted to his presence by the messenger he deputed for the purpose, and I accordingly entered the gloomy mansion. The ascent from the lower to the upper story is accomplished by means of something between a staircase and a ladder, which I had to grope my way up. The lower apartments, with exception to the hall are, I understood, only used as cells for prisoners, consequently the admission of light and air is a secondary consideration; at the top of the ladder however, I found myself in a well ventilated and roomy anti-chamber without furniture of any description, but in which the numerous attendants of the Rajah were demurely seated all round with their backs to the walls.

In the next room I found the Rajah seated on a small square platform covered with red cloth, very grave and grand, but very dirty, with legs crossed and arms folded, looking as like one of the figures of the immortals I had just been examining in the temple, as it was possible for a mere erring mortal to do. In a recess to his right there was a repetition of the gilded figures of the temple, which he said was a representation of the Dhurma Rajah. Before these the people, who were with me, connected with Dooars who knew the customs of this little court, made humble obeisances and one or two in the back ground, whom from having been formerly under him, the Rajah knew by name, he directed to do so, but he paid no attention to the nonconformity of myself and followers with the usage. For me an arm chair was placed, in which I seated myself without any ceremony.

The Rajah had before him a little low table on which oranges and other things fancifully arranged in the style of the offerings before the altars, were deposited, and on it several joss sticks were burning, which emitted an aromatic odour; before this table, as before the altar, a pan

of burning charcoal was placed, all I suppose emblematic of his being the representative of the Dhurma Rajah.

I forgot to mention that on my road up I met a messenger with a letter from the Rajah in reply to my missive of the preceding day, announcing my intention of visiting his village, in which he stated that if I halted at the boundary he would come down and see me the following day and arrange about my going up. I told his messenger I could not wait so long. He said there was no objection to my proceeding at once if I pleased; so on I went.

The Rajah opened the conversation by remarking that when *one great* man came to visit *another* due notice should be given in order that preparations worthy of the event might be made. However, as I had come to Dewangari in this off-hand manner, he hoped I intended to remain a few days, in which case he would be happy to entertain me. He evidently did not understand the visit, and hardly knew whether he should receive it as a compliment or otherwise. I believe I explained all to his satisfaction, for he ended by repeating his invitation to me to remain in a more cordial and pressing manner, offering to provide every thing for the whole party, and promising if the Dhurma Rajah permitted him, to come and see us at Gowhatty. We discussed other matters, but I found on political subjects he would give no opinion without receiving particular instructions from the Dhurma Rajah. The day was now waning and I rose to depart, promising to repeat the visit, if circumstances admitted of my doing so. I have no doubt I committed what was in their eyes a breach of etiquette in going up to Dewangari without having previously a long correspondence on the subject, but had I entered into this the Rajah would in all probability have, in selecting a lucky day for the event, have so put off the period of my visit that I should have been unable to go at all. Descending into the village I found the news of my arrival had collected together all the inhabitants, and a very little encouragement converted them all into most importunate beggars. Throwing a few small coin to some of the women, I was instantly surrounded and half-smothered by a mass of blooming *Bootia* beauties, pressing upon me for similar favours.

I use the word "blooming" advisedly, and not as a mere alliterative redundancy. The women have broad flat Tartar faces, small eyes, large mouths, noses short and low, not on the whole the most pleasing com-

bination of features, but many of them have fine plump rosy cheeks, healthy and pleasant to look upon, though the complexions, a light olive, have nothing in common with lillies. Their figures are concealed by the amplitude of their robes. They appear to take less care in adorning themselves than any Hill lasses I have met with. Their clothes are dirty, clumsily made, and awkwardly put on. Their tresses are generally left to float as nature pleases, though some few of the more tidy and respectable matrons had their's bound with a handsome bandeau of flat silver chains with a large ornament in front. Some damsels appear with shorn heads, and these I understand have all taken vows of celibacy. They are mostly widows, whose pretensions to virginity could not under any circumstances be supported, but some old women amongst them, with shorn heads, asserted their claim to the title.

I saw little cultivation, and excepting a few women weaving, no one appeared employed in any useful occupation. In weaving the women are seated on the ground. The web passes round three rollers of wood forming a triangle. One of these, attached by a leather belt to the woman, one supported on two posts in front of her, and the third pinned to the ground farther off. The woman by her position keeps the web stretched to the necessary tightness. The shuttle is a small hollow bamboo containing a roller for the thread. This she passes through the inclined web before her working upwards, and passing the woven part round below, until the whole piece completed thus comes round. The fine woollen cloths which the Bootias export are not made here, being brought from the interior. They are of very superior manufacture, resembling in pattern, material and softness of texture the Scotch tartans. The affection of all Hill tribes for plaids is singular; we have them all round the valley.

The cloths manufactured at Dewangari are of cotton or of erie. The latter brought from the plains.

The greater portion of the population of Dewangari consists of the Rajah's followers, or of traders, who make this their temporary residence for more convenient barter with the plains; the rajah himself is not above making money in this way;\* whilst he keeps back other

\* Every officer of the Bootan government is allowed a certain sum of money from the public treasury to trade upon, and which at stated periods he returns with interest.

traders on the pretence that the moon is not sufficiently old for their periodical migration, his own agents are allowed egress with Bootia cloths, which they dispose of before the market becomes swamped. Of "giris" or permanent householders, I was informed there are not now more than twenty about Dewangari, great numbers having deserted and settled in the Dooars. And as those who remain are subjected in consequence of the desertions to more than their former share of annoyance, they too are likely ere long to desert. I saw at Soobunkottah upwards of 60 Boots and Bootnis who had there settled; at Gooroo-gong, there are as many more; and they are settling in other places besides these two. They have not as yet taken up any land; and told me they had no intention of doing so, as they find they can push a very comfortable livelihood by trading. I told them I should tax them whether they cultivated or not. They were quite willing they said to pay whatever I imposed.

It was 2 P. M. before I got clear of the Dewangari village; we had the use of the rajah's ponics a part of the way; I believe he ordered that they should go with us the whole way, but his people made some demur and I sent them back, as I could get on just as fast on foot. We returned by the same road, and some of us got to the foot of the hills shortly after sunset, and I got back to camp at 7 P. M. Some of the party were not up till 9 P. M. It was a hard day's work.

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*The Pine tree of the Tenasserim Provinces.* By the Rev. F. MASON.

Some twenty years ago the residents of Moulmain were not a little surprised to find, among the drift wood of the Salwen, a log of some coniferous tree. This was the first intimation that any tree of the Pine tribe grew on the borders of these Provinces; but whether it were of the genus *Pinus*, or *Abies*, or *Larix*; a pine, a fir, or a larch, did not appear. It was several years after this occurrence, that one of our former commissioners told the writer he had offered a hundred rupees to any of the foresters who would bring down a spar of this tree. Spars have been, subsequently, brought down, but it is believed that Capt. Latter, the Superintendent of Forests in these provinces, is the first Euro-

pean who has visited the locality where the tree is indigenous, and from specimens of the foliage and fruit, which he has brought away with him, it appears to be a new species of *Pinus* that may be characterized thus:—

*P. Latteri.* Arbor 50—60 pedalis, cortice scabro, foliis geminis 7—8; uncialibus caniculatis serratis\* scabriusculo, strobilis and uncialibus ovato—conicis, squamis rombeis inermis.

*Hab.* In provincia *Amherst*: in convalli fluvii *Thoungyeen*.

*Descr.* A tree of from 50 to 60 feet high, or more, and from 1½ to 2 feet or more in diameter. Sheaths of the leaves arranged spirally, tubular, membranous, six lines long. Leaves two from each sheath, equal, from 7 to 8 inches long, acute with a sharp point, convex on the back, slightly scabrous with eight rows, in pairs of very minute thorns which produce a striated appearance, hollow on the under surface serrated cones ovate-conical, nearly four inches long. Scales rhomboid, unarmed.

The flower is unknown. A single ripe cone that had cast its seeds, and a small branch, being all the materials that have been furnished for description.

Specimens of the wood that have fallen under the writer's notice contain more resinous matter than any other species of coniferæ he ever saw. It appears like woody fibre immersed in resin. The Karens make tar from the wood, by a very simple process; and large quantities of both tar and pitch might be manufactured in the forests, if a remunerative price could be obtained for the article.

This species has been named after Capt. Latter, as the discoverer, because all our acquaintance with the tree has been derived from him, beyond the vague knowledge that a tree of the pine family existed somewhere on the banks of the Salwen. He reports it as growing with the Engben, which is a species of *Dipterocarpus* that is met on the sandy shores of the Province of Tavoy, side by side with *Casurina muricata*. This Pine is not found west of the Donaw mountains, a part of an unbroken range of granite mountains that runs down from the falls of the Salwen to the old city of Tenasserim, and which here separates the valley of the Thoungyeen from the region watered by the

\* Lindley says of the order, "Leaves—entire at the margins;" but these are certainly finely serrated; and I find *P. excelsa* described with leaves "tooth-letted."

Gyne and its tributaries. In a note to the writer Capt. Latter adds : "In the valley of the Thoungyeen it is found growing on the raised central plateau of sandstone, mixed up with Engben trees, and in proportion as the elevation increases the Engben disappears. In the lower Thoungyeen, towards the remotest parts of the valley, it is found on ranges of hills west of Theglar river. These are its sites on the British side of the Thoungyeen. On the Shan side of the river, it is said to be more abundant, and appears to occupy the lower portion of the Toungnyoo range, where the sandstone formation is more prominently developed. From the accounts of Burmese foresters who have seen the Pine forests on both sides of the river, the tree appears to be of a finer growth on the Shan side, than on the British, where trees are to be found of *nine* feet in girth and proportionably tall. I should say that on the British side of the valley the tree ranges at an altitude of 1000 to 15,000 feet above the level of the sea ; and that its latitude is about 17° north."

Possibly it may prove to be a known species ; but it is not among the *twenty-two* species described by Loudon as the denizens of Great Britain, nor among the *twelve* species described by Michaux in his "North American Sylva," nor is it either of the Indian species described by Roxburgh. Should it, however, be a species described in some other work to which the writer in these "outskirts of civilization" has no means of access, some of the members of the Society will probably be able, with this description and colored drawing, to point out the identity, and though then this note will be no contribution to science, it will still be a contribution to our knowledge of the resources of the Tenasserim Provinces.

PROCEEDINGS  
OF THE  
ASIATIC SOCIETY OF BENGAL

FOR JANUARY, 1849.

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The usual monthly meeting of the Asiatic Society was held on the evening of Wednesday, the 10th January,

The Hon'ble the President in the chair.

The accounts and vouchers for December were submitted.

*Mr. Wm. Macintosh*, Civil Architect, who had been duly proposed and seconded at the December meeting, was ballotted for and elected.

Read letters—

From Capt. Powell, Steamer "Precursor," requesting his name to be removed from the list of members.

From the Hon'ble the President, forwarding a paper by Mr. Hodgson of Darjeeling on the Chepang and Kusunda tribes of Nepal (with drawing).

From the Hon'ble Mr. Bethune, requesting on the part of the Calcutta Public Library, to have a copy of the Journal, Bibliotheca Indica and other Oriental works published by the Society supplied free of charge. Ordered as requested.

From B. H. Hodgson, Esq. Darjeeling, a memorandum relative to the Seven Cosis of Nepal.

From the same—a Route from Kathmandu, the capital of Nepal, to Darjeeling in Sikim, interspersed with remarks on the people and country.

From the President of the Batavian Society of Arts, acknowledging receipt of the Bibliotheca Indica and of the Journal.

From J. W. Laidlay, Esq. V. P., &c. presenting, for the use of the Zoological Section, the sum of 500 rupees, due by the Society to Mr. Laidlay, for 100 copies of his version of Fa Hian. The thanks of the Society were unanimously voted to Mr. Laidlay for the above donation.

Also from Mr. Laidlay, Notice of a Chinese Geographical work.



From Dr. Aloys Sprenger, communicated by Mr. H. M. Elliot, a passage from Ibn Qotaybah's *Adab al Kátib* on Arabic Astronomy.

From Messrs. Holmes & Co. presenting a copy of the Bengal Biography and Obituary.

From Professor Holmboe of Christiania, presenting specimens of the Norwegian coins of the present reign, and a bronze medal commemorative of the 25th year of the reign of Charles John. The thanks of the Society were voted to Professor Holmboe.

The Secretary read the Annual Report of the Council, showing the state and progress of the Society during 1848. The Report was unanimously adopted.

The meeting proceeded to elect office-bearers for the ensuing year. The results are given in the supplement to the Report.

The Curators and Librarian having submitted their usual reports, the meeting adjourned.

W. B. O'SHAUGHNESSY,

*V. P. and Secretary.*

LIBRARY.

The following books have been added to the Library since the 1st of November, 1848.

*Presented.*

Det Oldnorske Verbum, oplyst ved sammenligning med Sanskrit og andre sprog af Samme Aet. Af C. A. Holmboe. Christiania, 1848, 4to. (*Pamphlet.*)—BY THE UNIVERSITY OF CHRISTIANA.

Das älteste Münzwesen Norwegens bis gegen Ende des 14 Jahrhunderts Eine Abhandlung von C. A. Holmboe; Christiania, 1847, 8vo.—BY THE SAME.

Traité de la Spéidalskhed ou Elephantiasis des Grecs, par D. Danielsson, et W. Boeck. Traduit du Norweigian, par L. A. Cosson. Paris 1848. 8vo. Avec un Atlas de 24 planches folio.—BY THE SAME.

Transactions of the China Branch of the Royal Asiatic Society, for 1847. Hongkong, 1848. 8vo.—BY THE SOCIETY.

The Bengal Obituary, or a record to perpetuate the memory of departed worth, being a compilation of Tablets and Monumental Inscriptions from various parts of the Bengal and Agra Presidencies. Calcutta, 1848, 8vo.—BY MESSRS. HOLMES & Co.

Astronomical Observations made at the Observatory of Cambridge by the Rev. J. Challis, Vol. XV. for the year 1843. Cambridge, 1848, 4to.—BY THE UNIVERSITY OF CAMBRIDGE.

The Oriental Christian Spectator for Nov. 1848.—BY THE EDITOR.

The Oriental Baptist, Nos. 24-5.—BY THE EDITOR.

Meteorological Register kept at the Surveyor General's Office, Calcutta, for the months of October and November, 1848.—BY THE DEPUTY SURVEYOR GENERAL.

Upadeshaka, Nos. 24-5.—BY THE EDITOR.

Tatwabodhini Patriká, Nos. 67-8.—BY THE TATWABODHINI' SABHA'.

The Journal of the Indian Archipelago, Nos. X, XI, and XII.—BY THE EDITOR.

Ditto ditto (2 copies).—BY THE GOVERNMENT OF BENGAL.

Fragments of an Oration against Demosthenes, respecting the money of Harpalus, by A. C. Harris. Alexandria, 1848. 4to. Pamphlet.—BY THE EDITOR.

The Calcutta Christian Observer for Nov. and Dec. 1848.—BY THE EDITORS.

The Oriental Christian Spectator, Vol. IX. Nos. 9-10.—BY THE EDITOR.

Geschiedenis en Beoordeeling van het Pantheïsme of Algodendom, door, S. A. Buddingh. 4to. Pamphlet.—BY THE AUTHOR.

Chun's Verzeichnitz nuier Bücher mit binschluss des Landkarten uud sonstiger im Buchhandel vorkommender Artikel, 4 vols. 12mo.—BY MR. H. B. KONIG of Bonn.

Die Sprachphilosophie der Alten, von Dr. L. Lersch. Parts I—III, 8vo. 2 copies.—BY THE SAME.

Zeitschrift Sur die Kunde des morgenlandes. Im Viereine mit mehreren Gelehrten herausgegeben von C. Lassen. Siebenten Bandes erstes Heft, 2 copies.—BY THE SAME.

Kammavakya, Liber de officiis Sacerdotum Buddhicolorum. Edidit Fredericus Spiegel, 8vo. 12 copies.—BY THE SAME.

Caroli Rieu de Abul Alae Poetae Arabici. Vita et Carminibus, secundum Codices Leidanos et Parisiensem commentatis. 8vo. 12 copies.—BY THE SAME.

Indische Alterthumskunde. von C. Lassen. Ersten bandes II. Hälfte. 7 copies.—BY THE SAME. (This work is dedicated to the Asiatic Society of Bengal).

De Accentu Compositorum Sanscriticorum ; Auctore S. T. Aufrecht. 8vo. 4 copies.—BY THE SAME.

Die Topographie Jarusalem's, von W. Krafft. Bonn, 1847, 8vo.—BY THE SAME.

Carmina Valerij Catonis cum Augusti Ferdinandi Naekii Annotationibus. Eura Ludovici Schopeni. Bonnae, 1847, 8vo. 3 copies.—BY THE SAME.

Geschichte der Klassischen Philologie im Alterthum, von Dr. A. Grafenhan. 3 vols. 8vo. 2 copies.—BY THE SAME.

Aristophanis Lysistratâ cum scholiis. Ex recensione Roberti Enger. Bonnae, 1844, 8vo. 2 copies.—BY THE SAME.

Aristophanis Thesmophoriazusaë cum scholiis. Ex recensione Roberti Enger. Bonnae 1844, 8vo. 2 copies.—BY THE SAME.

Ueber die Keilinschriften der Ersten und Zweiten Gattung. Von C. Lassen und N. L. Westergaard. Bonn, 1845, 8vo. 2 copies.—BY THE SAME.

Bibliothecae Sanskritæ sive Recensus Librorum Sanskritorum Hucusque typis vel Lapide exscriptorum critici Specimen. Bonnae ad Rhenum, 1847, 8vo. 13 copies.—BY THE SAME.

Mric'chakatiká id est Curriculum Figlinum Sadrakæ Regis Fabula Sanscritæ, edidit Adolphus Fridericus Stenzler. Bonnae, 1847, 4to. 10 copies.—BY THE SAME.

Biblische Abhandlungen von Dr. J. G. Sommer. I. band.—BY THE SAME.

Rámáyana ; id est carmen epicum de Ramae Rebus Gestis Poetae Antiquissimi Valmicius opus. Adiecit, Aug. Guilelmus a Schlegel. Vol. I. parts I. and II. and Vol. II. part I. 8vo.—BY THE SAME.

#### *Exchanged.*

The Athenæum, Nos. 1087, 1090, 1091—1097 and 1099.

The Picnic Magazine, Nos. IX. X. and XI.

#### *Purchased.*

Comptes Rendus, Tome XXVII. Nos. 5—11.

Journal des Savants for Aug. 1848.

The Annals and Magazine of Natural History, Nos. X.—XI.

The Edinburgh Review, No. 178.

Brija Kisora Ghosa's History of Puri.

Atlas to Allison's History of Europe, parts XVII. XVIII. and XIX.

Gould's Birds of Australia, parts 35 and 36.

Edmond's Distribution List of the Bengal Civil Service for Nov. 1848.

#### *Museum of Antiquities.*

The donations received in this department since the last meeting, are as follow :—

1. From J. S. Campbell, Esq. A New Zealand water-proof cloak.

2. From—Fitzgerald, Esq. A stone arrow-head, from a mount near the summit of the Allighanies.

3. From the University of Christiana. A bronze medal and seven Norwegian silver coins. The medal bears, on the reverse, a bust of the king Charles John, and the inscription—*Carolo Johanni D. G. Regi Norv. Soc. Goth. Vand. Anno Imp. XXV. Urbs Nidarosiae Memor M.D.CCC.XLIII.* On the obverse, the king is seated on a throne in the centre of a gothic apartment, around which is inscribed—*Priscum Nidarosiae decus Restitutum. Die VII. Septembo M. D. CCC.XVIII.*

*Report of Curator, Zoological Department.*

My last published Report was that for the month of June, published in the No. of the Journal for that month; and I have now to record the donations received since that time.

July, 1848. M. Alfred Malherbe, of Metz. A large collection of mammalia and bird skins, and of land and fresh water shells, chiefly from Algiers, with others from different parts of Europe; together with sundry specimens of mammalia and birds packed with them by Mr. A. Bartlett, including many presented by H. E. Strickland, Esq.

The collection received from M. Malherbe is as follows: (1)

MAMMALIA.

*Genetta ofra*,—Algiers.

\**Mustea erminea*, L. France.

*Lutra vulgaris*, var. ? (N. S. apud Lesson.) Algiers.

*Sorex alpinus*,—Switzerland (St. Gothard.)

*S. araneus*, L. France.

*Dipus mauritanicus*,—Algiers (Oran).

†*Mus rattus*, L. Three specimens. France.

\**M. sylvaticus*, L. Switzerland.

*Arvicola nivalis*,—Switzerland (snowy summits.)

\**Lemmus norvegicus*,—Norway.

*Cephalophus natalensis*, A. Smith. Port Natal. S. Africa.

AVES.

\* †*Tinnunculus cenchris*, (L.): *Falco tinnunculoides*, Natterer. Female. Algiers.

†*Circus cinerascens*, (Mont.) Adult and young males. Algiers.

\* †*Accipiter nisus*, (L.) Male and Female. Algiers.

†*Gyps fulvus*, (L.) Adult. Algiers.

*Scops Aldrovandi*, Ray; *Strix scops*, L. Algiers. (Identical with the Indian species, of which the grey variety is *Sc. pennata*, Hodgson, and the chesnut variety—figured in Mr. Jerdon's 'Illustrations of Indian Ornithology,' pl. 41,—is *Sc. sunia*, H. (2)

(1) The species of which the museum had previously European specimens have an asterisk prefixed; and those of which it contained Indian examples are distinguished by a cross. Those of other regions previously in the museum are marked with a double cross.

(2) M. Malherbe remarks of this species, in his 'Catalogue Raisonné des Oiseaux de l'Algerie,'—"Paroit plus rare: forêts de la Calle. Le sujet que j'ai reçu est d'un roux vif rayé de noir et de cendré." That forwarded by him to the Society is grey with a rufescent tinge.

- Athene noctua*, (Retz : *Strix nudipes*, Lesson : *Str. passerina* apud Latham and Temminck ; *Athene bactrianus*, nobis, *J. A. S.* XVI, 776). Two specimens. Algiers.
- \**Nyctale Tengmalmi*, (Gmelin). Sweden.
- \**Syrnium aluco*, (L.) Algiers.
- †*Upupa epops*, L. Female. Algiers.
- \* †*Coracias garrula*, L. Algiers.
- †*Ceryle rudis*, (L.) Greece. (Identical with *C. varia*, Strickland, of India.)
- \**Alcido ispida*, L. Algiers.
- \**Merops apiaster*, L. Morea.
- Picus medius*, L. Male and female. France.
- P. pubescens*, L. Male. N. America.
- \**P. minor*, L. Male. France.
- \**Picoides tridactylus*, (L.) Female. Switzerland.
- Celeus flavescens*, (Gm.). Male. Brazil.
- Dendrobates goërtan*, (Gm.) Male and female. Hab. Senegal.
- Colaptes cayannensis*, (Gm.) Male. Oronoco.
- Oxylophus glandarius*, (L.) Male and female. Algiers.
- Caprimulgus ruficollis*, Tem. Female. Algiers.
- †*Cypselus melba*, (L.) Female. Switzerland.
- †*Pyrrhocorax alpinus*, Vieillot. Male. Pyrenees.
- \**Nucifraga caryocatactes*, (L.) Male. France.
- †*Sturnus unicolor*, Marmora. Male and female. Sardinia. (These have scarcely a trace of the brilliant-coloured glosses of Capt. Hutton's Afghanistan specimens.)
- Passer salicaria*, ( ) ; *Fringilla hispaniolensis*, Tem. Male and female, Algiers. (Identical with the Afghanistan race.)
- Petronia stulta*, (Gm.) : *Fringilla petronia*, L. Male. Italy. (Do.)
- \**Acanthis cannabina*, (L.) Male. Algiers.
- \**Chrysomitris spinus*, (L.) Male. France.
- Centrophanes lapponicus*, (L.) Male and female. Finnmark.
- \**Emberiza miliaria*, L. Two specimens. Algiers.
- \**E. cirrus*, L. Male. Algiers.
- E. melanocephala*, Gm. Male. Dalmatia. (Differs from Mr. Jerdon's *E. melanocephala* of S. India in its much larger size ; having the wing 4 in., the tail 3 in. long, and the rest in proportion.)
- E. cæsia*, Cretschmar. Male. Lombardy.
- \**E. hortulana*, L. Male. Italy.
- E. hyemalis*, (L.) Male. Siberia.
- \**Melanocorypha calandra*, (L.) Two specimens, from Italy and Algiers.

*Galerida cristata*, (L.) Algiers. (Well distinguished from the species referred in the museum to *G. chendoola* and *G. Boysii* of India).

†*Calandrella brachydactyla*, (L.). Italy. (Identical with the so called 'Ortolan' of India, *Emberiza baghaira*, Franklin, v. *Alauda dukhunensis*, Sykes.)

*Accentor alpinus*, (Gm.) Male and female. Switzerland.

*Parus sibiricus*, Gm. Siberia.

*Lanius rufus*, L. Two males. Algiers.

*Pycnonotus obscurus*, (Gm.) Female. Algiers.

†*Petrocosyphus cyaneus*, (L.) Male and female. Italy and Algiers. (Identical with *P. longirostris*, nobis, *J. A. S.* XIV, 150; and barely, if at all, separable from *P. pandoo* (Sykes): but distinct from *P. affinis*, nobis, and *P. manillensis*, (Gm.).)

*Sazicola leucura*, (Gm.) Female. Algiers. (Distinct from *S. leucura* apud nos, *J. A. S.* XIV, 131; now *S. opistholeuca*, Strickland.)

*S. stapazina*, (Gm.) Male. Algiers. (Well distinguished from *S. atrogularis*, nobis, *J. A. S.* XVI, 131.)

*S. aurita*, Tem. Male. Algiers.

\**Pratincola rubicola*, (L.) Three specimens. Algiers.

\**Pr. rubetra*, (L.) Female. Algiers.

*Ruticilla tithys*, (L.) Female. France.

*Muscicapa atricapilla*, Gm.: *M. luctuosa*, Tem. Algiers.

\* †*Hirundo rustica*, L. Algiers.

†*H. rupestris*, Gm. Algiers.

†*Budytes melanocephala*, (Savi). Male. Algiers. This appears to be perfectly identical with the common Indian and Malayan species, the adult males of which (towards the breeding season) have the head and ear-coverts dark fuscous-slaty, contrasting with a white chin and line bordering the throat, and a bright yellow throat and under-parts. Whether during the height of the breeding season the head becomes pure black, we are unaware; but suspect not, though we have seen black-headed specimens in European museums. Burnes figures one from Kabul, and Mr. Jerdon refers to such in the Madras Journal, XI, 19, citing them under the name *B. melanocephala*.) (1)

*B. cinereocapilla*, Bonap. Male. Algiers. (Resembles the last, except that the whole throat, as well as chin, is pure white.)

\**B. flava*, (L.): *B. neglecta*, Gould. Male. Algiers. (Identical with speci-

(1) Capt. T. Hutton has subsequently presented the museum with a pair from Kandahar, the male of which has the head, nape, and ear-coverts quite black. His Deyra Doon species appears to be the same as the Bengal one; but his Pied Wagtail of the Doon is well distinguished alike from *Motacilla luzoniensis*, *alba*, and *Yarrellii*.

mens from Norway ; and scarcely, if at all, distinguishable from some young specimens of the common Bengal species, which have the white supercilium more or less developed.)

\**B. flaveola*, (Tem.) : *B. flava* of British authors, *passim* : *B. Raii*, Bonap. Male. Algiers. (The crown much darker than in British specimens, and the yellow supercilium, consequently, more strongly contrasting.)

†*Anthus trivialis*, (L.) Algiers.

†*A. Richardi*, Vieillot. Young female. Sicily.

†*A. aquaticus*, Bechstein. Two specimens : in summer plumage ; Switzerland : winter dress ; Algiers.

†*A. campestris*, Vieillot : *A. rufescens*, Tem. Algiers. (Identical with *A. rufulus* apud Jerdon et nos ; and the true *A. rufulus* is decidedly the common *A. malayensis*, Eyton.)

*Aëdon galactotes*, (Tem.) Two specimens. Algiers.

†*Cisticola cursitans*, (Franklin) : *C. schænicola*, Bonap. Algiers. (Undistinguishable from Indian specimens, unless it be that the average size is rather larger, and the black predominates more upon the crown. If procured in India, this Algerian specimen would scarcely be remarked even as a slight variety.)

*Calamodyta aquatica*, (Gm.) Two specimens. Sardinia.

*Curruca orphea*, (Tem.) Female. Algiers. Distinct from *C. Jerdoni*, nobis, v. *C. orphea* apud Jerdon, *Catal.*)

*C. melanocephala*, (Lath.) Male and female. Algiers.

*C. provincialis*, (Gm.) Male and female. Sardinia and Algiers.

\**Phylloscopus sibilatrix*, (L.) Italy.

\**Ph. trochilus* (L.) Algiers.

\**Ph. rufus*, (Bechst.) Two specimens. Algiers.

*Ph. Nattereri*, (Tem.) Two specimens. Italy.

*Regulus ignicapillus*, Leach. Two males and female. Sardinia.

\**Troglodytes europæus*, (L.) France.

†*Tichodroma muraria*, (L.) Male and female. Sardinia.

*Columba livia*, L. Four domestic varieties.

*Pterocles alchata*, (L.) : *Pt. setarius*, Tem. Male. Spain.

\**Lagopus mutus*, Leach : *L. alpinus*, Nilsson. Male, winter ; female, autumn. Switzerland.

*L. islandorum*, Faber : *Tetrao hyperboreus*, Tem. Male and female. Iceland.

*Caccabis græca*, (Ray) : *Perdix saxatilis*, Tem. Male and female, Italy. (Only differs from *C. chukar* of the Himalaya, Afghanistan, &c., in having a purely white throat, and in the ferruginous of the ear-coverts being less marked.)

*Turnix andalusica*, (Gm.): *Hemipodius tachydromus*, Tem. Specimen from Algiers (Oran).

†*Sypheotides afra*, (Gm.) Male. S. Africa.

†*Squatarola helvetica*, (L.) Two specimens. Algiers.

†*Hiaticula cantiana*, (Lath.) Two specimens. Algiers.

\**H. annulata*, G. R. Gray: *Charadrius hiaticula*, L. Algiers.

†*Himantopus candidus*, Brisson: *H. melanopterus*, Ray. Female. Algiers.

\*†*Hæmatopus ostralegus*, L. Algiers.

†*Totanus ochropus*, (L.) Algiers.

†*T. hypoleucos*, (L.) Algiers.

\*†*Tringa minuta*, (L.) Algiers.

†*Falcinellus igneus*, (L.) Female. Sicily.

†*Herodias bubulcus*, (Sav.): *Ardea russata*, Tem. Young. Sicily.

†*Botaurus stellaris*, (L.) France.

\**Ardetta minuta*, (L.) Sicily.

\**Sterna paradisæa*, Brunnich. Adult and young. Algiers and Sicily.

\*†*St. hirundo*, L. Male. Algiers.

\**Hydrochelidon nigra*, (L.) Summer and winter dress. Algiers.

*H. leucoptera*, (Tem.) Summer dress. Algiers.

†*Xema ridibundus*, (L.) Algiers.

\**Catarracta pomarina*, (Tem.) Newfoundland.

†*Phænicopterus roseus*, Pallas: *Ph. antiquorum*, Tem. Old male. Algiers.

†*Fuligula nyroca*, (L.) Female. Algiers.

†*F. cristata*, (L.) Male. England.

*Erismatura mersa*, (Pallas): *Anas leucocephala*, Female. Algiers.

\*†*Mergus merganser*, L. Male. Algiers.

\**M. serrator*, L. Female. Algiers.

*Podiceps auritus*, L. Male; breeding dress. Algiers.

\*†*P. philippeensis*, Gm.: *Colymbus minor*, *ibid.* Two. Algiers.

#### TESTACEA.

|                            |                                          |
|----------------------------|------------------------------------------|
| <i>Helix maritima</i> ,    | 2. Oran.                                 |
| <i>H. lactea</i> ,         | 1. France (Perpignan). 1. Africa (rare). |
| <i>H. albella</i> ,        | 2. Algiers.                              |
| <i>H. hieroglyphica</i> ,  | 2. Oran.                                 |
| <i>H. Jannotiana</i> ,     | 1. Oran.                                 |
| <i>H. candidissima</i> ,   | 2. France. 1. Oran.                      |
| <i>H. pisana</i> , Muller. | 3. France. 1. Algiers.                   |
| <i>H. variabilis</i> ,     | 3. France.                               |
| <i>H. niciensis</i> ,      | 2. France. 1. do. var. (very rare).      |



|                                                                         |                 |
|-------------------------------------------------------------------------|-----------------|
| <i>H. pyrenaica</i> ,                                                   | 2. France.      |
| <i>H. cariosa</i> ,                                                     | 2. Oran.        |
| <i>H. alabastitis</i> ,                                                 | 1. Africa.      |
| <i>H. hispanica</i> , L.                                                | 1. Oran.        |
| <i>H. Dupotetiana</i> ,                                                 | 1. Oran.        |
| <i>H. terrestris</i> , Pennant ( <i>H. elegans</i> , Drap., nec Brown). | 3. France.      |
| <i>H. cespitum</i> ,                                                    | 2. France.      |
| <i>H. olivetorum</i> ,                                                  | 2. France.      |
| <i>H. splendida</i> ,                                                   | 2. Constance(?) |
| <i>H. obvoluta</i> , Gualtieri.                                         | 2. France.      |
| <i>H. sylvatica</i> , (Drap. pl. VII, f. 27-29).                        | 2. France.      |
| <i>H. lapicida</i> , L. (Drap. VII, f. 35-37).                          | 3. France.      |
| <i>H. carthusianella</i> , (Drap. VI, f. 31, 32).                       | 3. France.      |
| <i>H. cornea</i> ,                                                      | 2. France.      |
| <i>H. fruticum</i> , Chemnitz (Drap. pl. V, f. 16-17).                  | 3. France.      |
| <i>H. naticoides</i> ,                                                  | 1. Africa.      |
| <i>H. altenana</i> ,                                                    | 2. France.      |
| <i>H. hortensis</i> , Muller (Drap. pl. VI, f. 6).                      | 4. France.      |
| <i>H. nemoralis</i> , Muller (Drap. pl. VI, 3-5).                       | 11. France.     |
| <i>H. melanostoma</i> ,                                                 | 1. France.      |
| <i>H. arbustorum</i> , Muller (Drap. pl. V, f. 18).                     | 4. France.      |
| <i>H. pyramidata</i> ,                                                  | 4. France.      |
| <i>H. lenticula</i> ,                                                   | 2. France.      |
| <i>H. Cervieri</i> ,                                                    | 1. France.      |
| <i>H. strigella</i> ,                                                   | 2. France.      |
| <i>H. vermiculata</i> ,                                                 | 1. France.      |
| <i>H. algira</i> , Lister.                                              | 1. France.      |
| <i>Bulimus acutus</i> , Lister.                                         | 12. Oran.       |
| * <i>B. radiatus</i> ,                                                  | 3. France.      |
| * <i>B. decollatus</i> , Drapernaud.                                    | 2. France.      |
| <i>Pupa tridens</i> , Drapernaud (pl. III, 57).                         | 7. France.      |
| <i>P. quadridens</i> ,                                                  | 5. France.      |
| <i>P. Goodallii</i> , (Mich. pl. XV, f. 39, 40).                        | 5. France.      |
| <i>P. pyrenaica</i> ,                                                   | 2. France.      |
| <i>P. avena</i> , (Drap. pl. III, f. 47, 48).                           | 13. France.     |
| <i>P. secale</i> , (Drap. pl. III, f. 49, 50).                          | 18. France.     |
| <i>P. cylindrica</i> ,                                                  | 2. France.      |
| <i>P. variabilis</i> ,                                                  | 5. France.      |
| <i>P. cinerea</i> ,                                                     | 9. France.      |
| <i>P. farenesi</i> ,                                                    | 5. France.      |

|                                                                                                             |             |
|-------------------------------------------------------------------------------------------------------------|-------------|
| * <i>Clausilia parvula</i> , (Mich. pl. XV, f. 21, 22).                                                     | 15. France. |
| <i>Cl. bidens</i> , (Muller, Drap. pl. IV, f. 5-7).                                                         | 6. France.  |
| <i>Cl. ventricosa</i> , (Drap. pl. IV, f. 14).                                                              | 11. France. |
| <i>Achatina folliculus</i> ,                                                                                | 2. Oran.    |
| <i>Lymnea stagnalis</i> , (Muller).                                                                         | 2. France.  |
| <i>L. auricularis</i> ,                                                                                     | 4. France.  |
| * <i>Physa hypnorum</i> ,                                                                                   | 8. France.  |
| <i>Cyclostoma mammillare</i> , Lam. ( <i>C. Voltzianum</i> , Michard).                                      | 4. Oran.    |
| <i>C. maculatum</i> , Drapernaude (pl. I, f. 12).                                                           | 6. France.  |
| <i>C. sulcatum</i> ,                                                                                        | 2. France.  |
| <i>Paludina viridis</i> , (Drap. pl. I. f. 26, 27).                                                         | 17. France. |
| * <i>Dreissina polymorpha</i> , (Gm.)                                                                       | 2. France.  |
| * <i>Anadonta anatina</i> , (L. Drap. pl. XII, f. 2).                                                       | 1. France.  |
| <i>A. minima</i> , Millet (Mem. de la Soc. d'Hist. Nat. du Dept. de<br>la Moselle, 1843, 2d Cahier, p. 44). | 2. France.  |
| <i>Unio rostrata</i> , (Mich., pl. XVI, f. 25).                                                             | 2. France.  |
| * <i>U. batava</i> , (Turton).                                                                              | 2. France.  |
| * <i>U. pictorum</i> , (L.; Drap. pl. XI, f. 1, 2, 4).                                                      | 2. France.  |
| <i>U. Requiennei</i> ,                                                                                      | 1. France.  |

With the above collection were also received the following :

From H. E. Strickland, Esq.

*Plecotus auritus*, Geoffroy.

\**Melunocorypha calandra*, (L.). Europe.

\**Fringilla montifringilla*, L. M. and F.

*Emberiza aureola*, Pallas. Siberia. (N. B. Distinct from the Indian species hitherto so termed,—*E. flavogularis*, nobis,—by having the lores, supercilia, ear-coverts and throat, black, &c.)

From Mr. A. Bartlett (for sale, or to receive the value in Indian specimens,)—

Of MAMMALIA—

*Felis leo*, L. Skeleton.

*Cercoleptes caudivolvulus*, (Pallas). Do.

*Procyon lotor*, (L.), and

*Nasua fusca*, Desm. Skulls.

Also skins (without bones) of

*Cercopithecus sabæus*, (L.) 2, and of

*C. ruber*, (Gm.) 2. In bad order.

*Felis leo* (N. Africa, very fine, and since mounted in the museum), taken from the individual of which the skeleton is also sent.

*Procyon lotor*, L.

*Nasua fusca*, Desm. Tail imperfect.

*Cercoleptes candidivolvulus*, (Pallas). Imperfect.

*Cælogenys paca*, (L.)

*Cervus virginianus*, L. Young male (not good).

*C. tarandus*, L. Juv. (forwarded on account of the Zoological Society).

*Myrmecophaga jubata*, L.

*Dasyurus sex-cinctus*, L. (epidermis wanting to bony dermal plates).

*Dasyurus viverrinus*, (Shaw). brown variety.

*Phalangista vulpina*, (Meyer).

#### AVES.

\**Macrocercus macao*, (L.)

*M. ararauna*, (L.)

\**Chrysotis amazonicus*, (Gmelin.)

*Chr. leucocephalus*, (L.)

*Calurus resplendens*, Gould.

*Rupicola aurantia*, Vieillot, 2 males.

*Paroaria dominicana*, (Gm.)

*Psophodes crepitans*, (L.) (Bad.)

*Penelope jacucacu*, Spix.

*Tetrao cupido*, L. Fœm.

*Houbara undulata*, Jacq. Male.

\**Cygnus atratus*, Latham.

*Dendrocygna viduata*, (L.)

\**Anas sponsa*, L. Male, non-breeding plumage.

Also a collection of glass eyes for stuffed animals.

2. The late G. T. Lushington, Esq. C. S., of Almorah. A skin of *Ovis ammon*, Pallas.

3. Mr. Birch, of the Pilot Service. A small living Crocodile.

4. Mr. P. Homfrey. A dead Squirrel (*Sciurus purpureus*), since prepared as a skeleton.

5. Babu Rajendra Mallika. Two dead specimens of *Satyra cornuta*.

#### AUGUST.

6. Babu Harri Chanda Ghose (Principal Sadir Amin of the 24 Pergunnas). A living *Felis viverrina*, since mounted in the museum.

7. W. C. Thorburn, Esq., now of Sandoway, Arracan. A few mammalia and bird-skins, from Chittagong.

## SEPTEMBER.

8. Capt. Lewis. A young Kangaroo in spirit.
9. Babu Rajendra Mallika. A dead male of *Gazella cora*.
10. C. Huffnagle, Esq. A dead specimen of *Arctonyx collaris*, and one of *Buceros pusaran*.
11. R. W. G. Frith, Esq. A semi-albino Snake, of the species *Tropidonotus umbratus*, (Daud.)
12. Babu Rajendra Mallika. Eight species of stuffed Parrots, of which four are new to the Society's collection, viz. *Coracopsis nigra*, (L.), *Aprosmictus erythropterus*, (Gmelin), *Platycercus semitorquatus*, Quoy and Gaynard, and *Eos Novæ Guineæ*, (Latham).

## OCTOBER.

13. Mr. Cleghorn, of the Pilot Service. A specimen, just dead, of the *Anous stolidus*, (L.), procured at the Sandheads during the violent storm of that month.
14. Col. Low, Penang. Specimens of an unnamed Swift, and of its nest.
15. Babu Rajendra Mallika. A stuffed female Silver Pheasant (*Gallophasis nycthemerus*).

## NOVEMBER.

16. Capt. S. R. Tickell. A few bird-skins from Darjiling, comprising a new species and genus of Shrike, for which Capt. Tickell proposes the name *Thamnocataphus picatus*.
17. E. L. Layard, Esq., and R. Brodie, Esq., Ceylon. A collection of mammalia and bird-skins from that island, comprising several new species, of which I am requested to draw up descriptions for the Society's Journal.
18. T. Hart, Esq., H. M. Steamer 'Inflexible.' A collection of shells from New Zealand; also a Pilot fish, *Naucrates ductor*, (L.); and an *Echeneis*, taken in the Indian Ocean: 3 specimens of an apparently undescribed Scincoid Lizard from the new settlement of New Edinbro', New Zealand; and a few Crabs and other *Crustacea* taken off the shores of that country.
19. Mr. J. Prosser. Some specimens of Swifts, in spirit, from Penang, comprising an undescribed species of *Acanthylis*.
20. R. Fitzgerald, Esq., of N. Carolina. The rattle of a Rattle-snake (*Crotalus*).



